47380 June 1994

Radio Control CAR ACTION

THE WORLD'S LEADING R/C CAR MAGAZINE

'94 RACE TRUCK GUIDE

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- tech tips from the pros
- winning setups & more!

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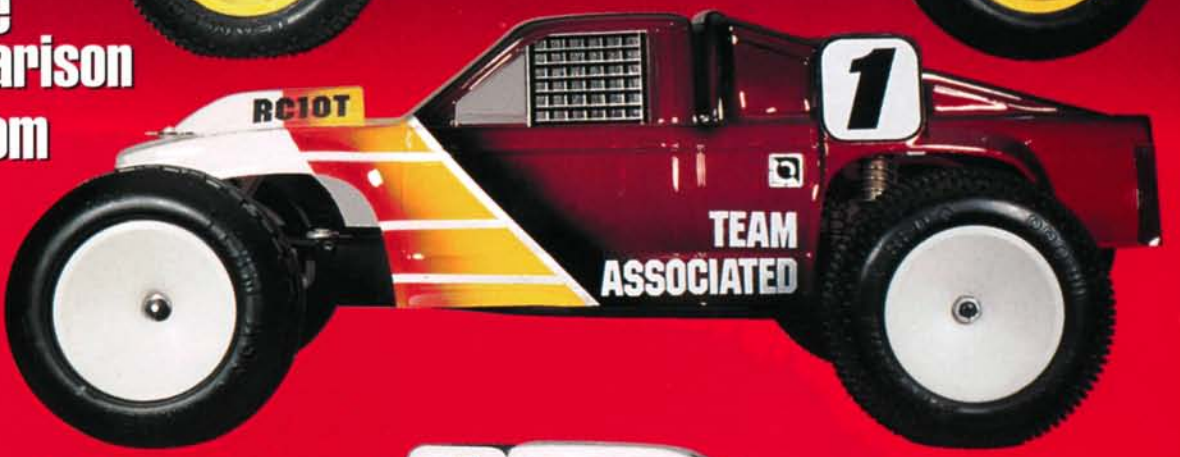
RC10 PERFORMANCE UPGRADES

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- Tamiya's Escort Rally and Benetton F1
- Traxxas 1/6 scale gas buggy

GETTING STARTED
Beginner's tool guide









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EDITORIAL

Toys in the Attic

HOW MANY R/C cars do you own? Me? I've lost count. I think there are a couple of old chain-driven Yokomos in a box somewhere, and I'm pretty sure that there are enough Team Car parts on my shelves to build two complete cars. There's also a Kyosho Optima with all that red-hot trick stuff on it. Remember Tridircomp? It was only red G-10 fiberglass, but it looked cool. I can't figure out why I still have all of this stuff. Maybe it's for sentimental reasons, or because I forget about my old "ride" as soon as I start building a new one. Whichever the case, something must be done with all these clunkers!

I thought of selling them, but I don't think that there's much of a market for old R/C cars. I could try to pawn them off as collectibles, but there aren't too many vintage R/C car collectors out there. Besides, nothing in my stable exactly qualifies as being pristine or a landmark. If any R/C vehicles could be considered collectible, I'd say that the original Tamiya HiLux (the original Bruiser) would be a prime candidate. The Cox Scorpion, the first RC10, and the Tamiya Holiday Buggy (remember how hot Holiday Buggy tires once were?) would also make my list. I could learn to unload my cars while they're still in demand, but that would take too much coordination.



A blast from the past! How do you think this Yokomo SE (circa 1986) would stand against today's hot racing machines? They weren't pretty, but we had lots of fun!

I could combine the parts of all my old cars to make a superhorrendous monster sled or something like that. Glue three chassis together; six gearboxes and eight motors; throw on some big tires; and have some fun.

I've always had this vision of blowing the dust off one of my old racers, taking it to the track and showing those young whippersnappers how it was done in my day: "We didn't have no fancy foam inserts or mini-pins. We drove 8D galvanized framing nails through the inside of our tires, and we liked it!"

Forgive me. Whenever I go through my R/C stuff, I become nostalgic. Every car, every pair of tires, every old motor and battery triggers a memory of a race, or a friend I made while running my cars. I always vow to throw some of it into the garbage, or to give it away, but I never do. For now, I think I'll keep *all* of my R/C stuff! ■



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LETTERS

WRITE TO US! We welcome your comments and suggestions. Letters should be addressed to "Letters," *Radio Control Car Action*, 251 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

THE CHCl:CCl_2 BLUES

I'm very allergic to trichloroethylene, and it seems to be in every type of motor spray. I was wondering if there are any other chemical solvents that can clean motors and bearings. I don't want to quit racing, and my friends are getting tired of cleaning my motors and bearings. Please help!

CHRIS WOLF
Chester, IL

Well, Chris, you could try Excel Products Inc. at (818) 788-0675. They have a motor spray called Pro Shot that's ozone-safe and doesn't contain any chlorinated solvents. As far as I know, they're the only ones who produce a motor spray that doesn't contain any chlorinated solvents. If any other company out there doesn't use trichloroethylene in their sprays, let me know, and I'll pass it along to everyone! JH

BEEFY BURNS

Hey, dudes!.Killer mag! I have a few questions. I have a Turbo Burns with a hopped-up graphite chassis, front brakes and an O.S. Max RF-B engine. Do you know of anyone who makes a metal spur gear? I keep stripping mine. I'm also thinking of selling my Turbo Burns and getting a Kyosho Inferno or a Mugen Super Sport '93. Do you plan to do a shootout between them? Which engines will fit in the Inferno and the Mugen Sport, and which engine will work best? Keep up the great mag; R/C gas rules!

THOMAS ALLEN
White Heath, IL

Thomas, you can use the same 53-tooth metal spur gear as the Inferno uses (no. BSW-19). Kyosho will soon offer 51- and 55-tooth metal spur gears for different applications.

As for the shootout, keep your eyes open for a feature article comparing the new Kyosho Turbo Inferno and Mugen's Athlete.

When it's time to choose a .21 engine for either car, you'll need one with a rear exhaust. Most engine manufacturers offer rear-exhaust versions of their .21 car engines. JH

CELL-BLOCK D

Thanks for keeping me in touch with the R/C world. There aren't any hobby shops close to where I live. In your August '93 issue, there was a "Readers' Ride" of a monster truck that ran off six D-cell batteries and had run times of 30 to 45 minutes. Well, I have a Kyosho Outlaw Ultima truck (not the gas Rampage) with a Novak 410 MXc ESC and a Reedy Ultra Series Mr. J motor. I would love to be able to run my truck for longer than four minutes! Can I use six D-cell batteries, or is this unsafe? Would I have to use something to control the power flow? If so, what? Thanks for keeping me informed!

BRETT DEGREEN
Elkhorn, NE

I don't know if that battery pack would fit in your truck, Brett. The D-cell batteries are huge, and fitting six of them in line down the middle of your chassis is gonna be a tight fit. Even if you manage to fit the pack in the chassis, handling will be greatly affected, and you'll quickly find that your truck wasn't designed to handle a pack that large. Anyway, although using D-cells might be impossible, you could try to get more run time with an MRC Juice Pack that consists of C-cells. It should fit with only a few modifications. Your 410 MXc will handle the Juice Pack and the D-cells well. JH

NOT HAPPENING

I'd like to know whether the gas conversion for the LX-T will fit the JR-X2 or any other Losi *cars*. If so, how well will it work?

DAVID JOHNSON
Ucluelet, B.C., Canada

Sorry, David, the DuraTrax LX-T gas conversion kit fits only the LX-T; it won't work with any other Losi cars or trucks. If you're interested in getting into gas, you'll either have to pick up an LX-T and the kit or get a production built gas truck. Good luck. JH

1/8 WONDER

I've been into R/C cars for about a year now, and I want to buy a new car. I'd like to buy an 1/8- or 1/10-scale gas car, but when I read all your articles on gas vehicles, it just seems too complicated. Can you recommend a fairly inexpensive car that's easy to build and maintain? I'm thinking about a Mugen Sport Seven, mainly because it's aimed at beginners and comes with an engine.

I also wonder whether you have any tips on getting an R/C club together. The nearest club is about an hour's drive from my house; I want to get a club together and build a track. Driving by yourself isn't nearly as much fun as racing with other people.

I'm also interested in drag racing and parking lot racing. Can you recommend some good kits in those classes?

BEN LARKIN
Warrensburg, MO

Well, Ben, the Mugen Sport Seven is an excellent 1/8-scale car for beginners. It comes partially assembled, and you can buy it with and without a pull-start engine. You might also want to check out the Inferno DX, which is also available with and without an engine, the Pirate M1 from Horizon, or the HODR, which is distributed by OFNA Racing. Unfortunately, you're on your own to provide the powerplant for the HODR.

As for your club idea, check out our last issue. We featured an article on neighborhood racing that displayed some pretty funky track layouts and suggested how to get some space to race. Check with your local hobby shops and ask whether they'd mind if you put up a few flyers featuring info on a hot new club starting up

(Continued on page 161)

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Hitec RCD Inc., 10729 Wheatlands Ave., Ste. C, Santee, CA 92071; (619) 258-4940.



ALPINE MOTORSPORTS

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The ⅛-scale, gas-powered, Bergonzoni Lancia Delta 4WD Rallycross features a .21 pull-start motor and a three-differential drive train with ball bearings. With its independent suspension, adjustable wheelbase and assembled, oil-filled shocks, it's easy to fine-tune the Lancia Delta to any track. The car can be ordered with a Toyota Celica body.

Alpine Motorsports; (714) 693-2930.

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Custom Works, 3720 Easton Dr. #6, Bakersfield, CA 93309; (805) 323-0471.

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Part nos.—KYOC0194 (kit), KYOC0196 (almost ready to run); **prices**—$119.95, $139.95.

Kyosho/Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826; (217) 398-6300.

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Product Update

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I get many questions how to maintain and clean motors between races.

Blow the motor out with compressed air, if available. If dirt has collected on the oil surrounding the bushing, then blow or brush it off. The most important part of the motor is the brush and comm. area. I don't recommend using motor sprays or comm. sticks in this area. Inspect the brushes for any discoloration caused by overheating and be sure the brushes move freely in the hoods. Replace or return the brushes. Re-route the brush wire exactly how it was removed. Re-oil the bushings. Apply Powerzone Comm. Drops and run the motor on a 4 cell pack for a few minutes. Keep the motor cool using a break-in fan. This cleans the commutator & brushes. It's as simple as that, no magic!

The Powerzone Comm. Drops are getting so popular that some other major motor factory team drivers are using it. The best way to apply it is directly to the comm. through a vent hole in the endbell or pull a brush out and put the needle applicator in the brush hood. Be sure to rotate the motor by hand or run it on low voltage.

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The Tool Resource, P.O. Box 1106, W. Dundee, IL 60118. (708) 468-0849.

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Part no.—44001; **price**—$760 (complete kit with engine).

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656; (714) 362-2240, ext. 834.

PARMA

Ford Splash Truck Body

Parma offers another popular pickup body that will certainly make a splash on the R/C scene—the '94 Ford Splash truck duplicated in 1/10 scale. Check out the detail!

Part no.—10380;
price—$19.

Parma Intl. Inc., 13927 Progress Pkwy., North Royalton, OH 44133; (216) 237-8650.



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INSIDE SCOOP

by CHRIS CHIANELLI

IN SEARCH OF FUN AND GLORY, 'CAUSE LIFE'S TOO SHORT TO BE CHEAP!



Jamara in America

The name Jamara (pronounced ya-mar'-a) may not mean anything to you, but they've been distributing R/C model products for years in Europe. Now they've come to America. Here are their first offerings in the car arena: the 4WD ⅛-scale Blazer truck and the Valiant Plus—a ⅒-scale, 2WD electric buggy. The Blazer features a 3mm Duraluminum chassis, an adjustable disk brake, planetary diffs with hardened-steel gears, and extra-large-capacity, oil-filled, coil-over shocks. All the facts on the ⅒-scale Valiant Plus aren't in yet, but from the picture, it looks as if it has some serious race features, e.g., oil-filled, aluminum, coil-over shocks and a slipper clutch. For more information, call (800) 685-8290, or write to Alpha USA, 55 Leveroni Ct., Novato, CA 94949.



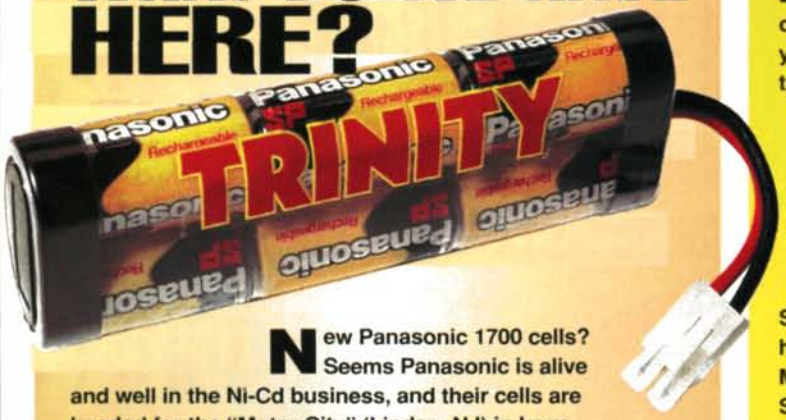




ROBBE RALLY MONSTER

In the future, the full-scale Panther 6x6—a converted six-wheel-drive airport fire engine—will be entering famous European events, such as the Paris/Moscow/-Peking Rally. The full-size Panther has yet to hit the road, and Robbe has come out with a ⅛-scale version of this three-axle animal. The highly prefabricated metal and plastic scale kit features an aluminum frame, three driven rigid axles, tension struts, coil-spring suspension, adjustable ball-end track-rods and true scale wheels with off-road tires. Contact Robbe Model Sports, 170 Township Line Rd., Belle Mead, NJ 08502; (908) 359-2115; fax (908) 359-1415.

WHAT DO WE HAVE HERE?



New Panasonic 1700 cells? Seems Panasonic is alive and well in the Ni-Cd business, and their cells are headed for the "Motor City" (Linden, NJ) in large numbers. Reportedly, these new yellow and black "SP" power cells are superior to the Panasonic P-170s; in what way, we don't know. Caesar Tiberius Provettacus ain't sayin'. Stay tuned.





Now you can fit your race truck with the tire design that won both buggy classes at the World Championships. The new Pro-Line Stubbie "T" was specifically designed for high traction on medium to hard surfaces. Made of Pro-Line's XTR compound, the Stubbie "T" is at home even on clay and extra-dry surfaces. Careful attention to the carcass design ensures uniform sidewall flex control during cornering. Pro-Line Stubbie "T" tires come with free foam inserts.

Stubbie-Rubber

Zero Gravity™ Pinions

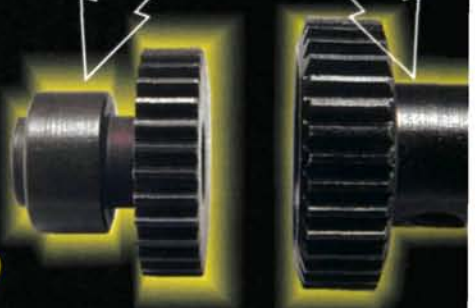
Trinity Pinions...Ours are precision machined from 6061 T-6 aircraft aluminum and teflon impregnated for smooth meshing and minimum friction.



Brand "R" ...They have poor tooth finish and profile. They don't mesh well with the spur gear.

Trinity Zero Gravity™ Pinions Are Super Light!

Brand "R" Pinions Are All So Over-Weight, Power is Reduced!



From Magic Motor Sports **$5.99**

In 48 pitch from 12 to 30 teeth • In 64 pitch pitch from 15 to 50 teeth

TRINITY™ We Are Your Source for ALL R/C Racing Needs

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TAMIYA DELIVERS THE JUICE

With Tamiya's new 1/16-scale Shell Oil Co. tank trailer, you may now re-enact that famous desert chase scene from the *Road Warrior*. If you're so inclined, now you have that "fat tank of gasoline" *(Road Warrior)* to spur you on. This highly detailed, steel-tank trailer is 2 feet, 8 inches long and features an aluminum upper-deck walkway, four manholes that open, a side-mounted hose with brass couplings, a rear ladder, a metal drainpipe, flaps and much more. All aluminum parts are anodized and California and Nevada license plates are included. Yes, that cab-over tractor is going to be available. Is it a Kenworth, a Peterbilt, or a Diamond Reo? Buy *Car Action* next month and find out! "Just walk away, and I'll spare your lives." *The Humongous.*





Precious Power

Onyx is the latest in the Speed Gems line of machine-wound motors from Trinity. Like the rest of the line, Onyx features Epic EX technology. The 14-turn, double-wind armature should be suitable for most racing applications. The Onyx has 5.0 wet magnets, dual ball-bearings and adjustable timing—features found with more expensive, hand-wound motors.

GET A GRIP.

Gettin' sideways is cool if you're running dirt oval, but if you're racing on carpet or asphalt, it doesn't cut it!

To improve foam tire performance on hard surface tracks, the race team worked with the chemical engineers at Trinity to develop Zip Grip™, a custom, hand blended R/C foam tire traction compound.

Using Zip Grip provides the most precise and repeatable tire performance on carpet or asphalt R/C racing tracks, of any formula available today. And, the new style applicator keeps the Zip Grip on your tires and off your hands.

So if you've been getting entirely to familiar with the turn marshals, it's time to "get a grip" with Zip Grip!



TRINITY®

1901 E. Linden Avenue, #8, Linden, NJ 07036 ▮ **908.862.1705** ▮ Fax 908.862.6875



James E. Englehart, executive director of Ford's Light Truck Product Development/Truck Operations and William B. Larsen, group director of General Motors' Engineering Operations/Truck & Bus Group, battled it out in the "Executive Challenge" in the first Annual Micro Baja Corporate Challenge last November held, where else, in Detroit, MI. The Ford Econoline pictured here is built up on a World Scale Thunder King chassis and suspension. Rumor has it, the gauntlet has been thrown down to Chrysler executives. Will they accept? Will it be a Big-Three R/C Jamboree?

Watch for more detail in, where else, the next "Inside Scoop"!



FoMoCo vs. GM IN Micro Baja

Viennese Magic Box

It seems that SCI has developed an electronic speed controller with limiting capability that's infinitely variable. The Stealth Viper's microprocessor computes the current limit relative to time, instead of rpm, and it will never exceed an amp setting, even when a short occurs. The long-time/low-current and short-time/high-current needs are constantly being monitored and adjusted on a moment-to-moment basis, giving your car absolute maximum spikes of smooth safe power without the danger of a burnout. The Stealth Viper also features three switching frequency options with an all-new 800Hz medium range. As with all SCI controllers, the Stealth Viper is precision-crafted in Austria using the latest in manufacturing technology. I know; I've been there!



LOWRIDE

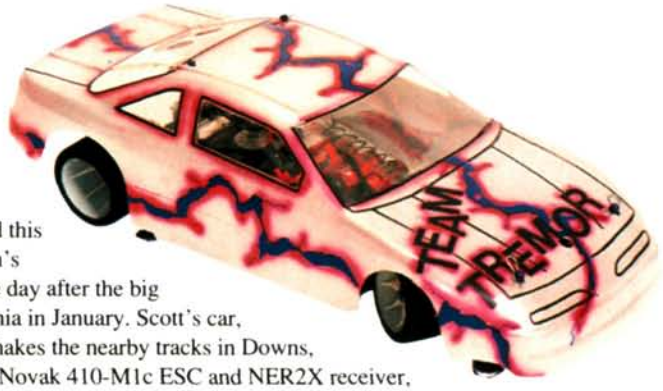
Tamiya has taken its 1/12-scale Midnight Pumpkin '53 Ford F-100 body—an all-time classic favorite—and transformed it into a ready-to-run California-style "lowrider." The factory-assembled Lowrider features a sealed differential, coil-spring suspension, an electronic speed controller and a pistol-grip radio that's available on six different frequencies. So all-out Lowrider rumble-races are possible. *Cuidado* man!

READY



READERS' RIDES

"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 251 Danbury Rd., Wilton, CT 06897. If the Ayatollah of Radio Controlla chooses your photo, you'll receive a 6-month subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the fourth annual "Reader's Ride of the Year Contest" in the fall of 1994. Write your address and phone number on your letter and on the back of each photo you send, in case we need to contact you.



QUAKE AND SHAKE

Ironically, we received this photo of Scott Bettisch's Associated 10L SS the day after the big earthquake hit California in January. Scott's car, which we hope only shakes the nearby tracks in Downs, IL, is equipped with a Novak 410-M1c ESC and NER2X receiver, a Futaba 132H servo and Magnum Junior radio, a Trinity Slot Machine 2 motor, B&R batteries and a Bolink '93 Grand Prix body that Scott painted.



WET AND WILD

Stephen Mueller of San Leandro, CA, sent this photo taken at Cull Canyon Lake of his Tamiya Toyota Bruiser pulling his Firehawk boat on a custom-made trailer. According to Stephen, the Bruiser is relatively stock, except for a dual rear shock system and a set of custom-made windshield wipers. The boat trailer is made of chromed brass and features Bruiser leaf springs, a spare tire rack and an adjustable mounting tongue.



TOP CLOD

This hot-looking Clod Buster owned by Gary Ragle has been extensively modified. Its heavy-duty mods include an ESP aluminum chassis, long-wheelbase suspension rods, Trinity Matched Madness motors, a Novak 610 RV ESC, Trinity Clod Buster shocks, 12 Trinity 2000mAh cells, Litespeed Super Connectors, a Dahm's Commando XL8 body and aluminum wheels that Gary's father made. Gary painted the body—including the trick-looking mural on the back of the body—with an airbrush.

BEACH BLASTER

This hot-looking Tamiya Super Blackfoot is owned by Sunny Saw, from San Francisco, CA. The truck has been modified with a set of DuraTrax competition shocks and a Novak 410 M-5 ESC. Sunny hopes to modify the truck with a Speedworks Monster Mash motor to help it clear those extra-long, beach-ball doubles.



READERS' RIDES



THREE'S COMPANY

These three hot-looking rides come from "Gentleman Jim" Walcott of Mission Viejo, CA. They are: (top) an Associated 10L SS, (right) a Bolink '91 Sport and (left) a Team Losi LX-T truck. All these vehicles feature Novak 410-M5 ESCs, KO Propo radio gear, Litespeed connectors, Lunsford titanium rods and a ton of other hop-ups. According to his letter, "Gentleman Jim is prepared to race anywhere, anytime!"

. . . . . .



GHOST RIDER

Inspired by the comic-book character, the "Ghost Rider," which Bryce DeVries hand-painted onto the body, this RC10T features a Novak ESC, RPM suspen-



sion arms and skidplate, graphite shock towers, an S&K Panther short-stack, 36-degree stock motor, Sanyo batteries and a Futaba Magnum 1024 PCM radio. Bryce, who's stationed in Honolulu, HI, during his stint in the Coast Guard, races his truck and has driven it on many of the South Pacific islands—lucky guy!

. . . . . .

THE MAGICIAN

William H. Moore's Tamiya King Cab, decked out in the "Fantasia" motif, has been modified with full ball bearings, a Trinity 16-turn triple, a Novak ESC and Sees aluminum wheels with Pro-Line tires. It's topped off with a trick-looking custom paint job on a Chevy pickup body. A Futaba Magnum Junior radio system transmits its frequency to "The Magician."

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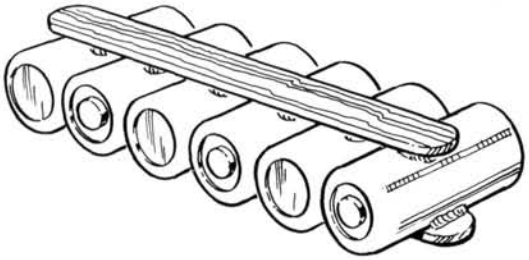
SPEEDY-T

Randy Bukoskey of Colstrip, MT, sent us this photo of his project RC10T. The truck, which Randy has worked on for roughly two years, is decked out with a Novak 410 M5 ESC, an A&L ball-bearing steering kit, RPM rear suspension arms, titanium turnbuckles, Trinity Maxzilla batteries and a Trinity Speed Gems Series Ruby modified motor. The truck soaks up radio waves transmitted by a JR Propo Alpina Jr. To top it all off, Randy's truck body has been airbrushed for a "drip-dry" effect.



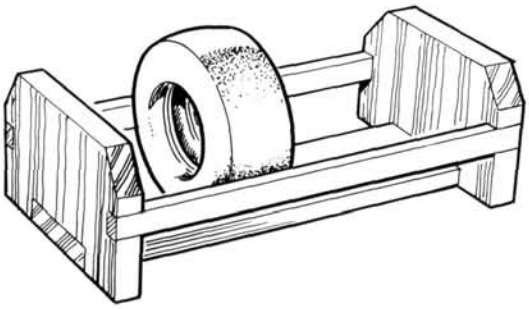
PIT TIPS

by JIM NEWMAN



NI-CD PACK STRENGTHENER

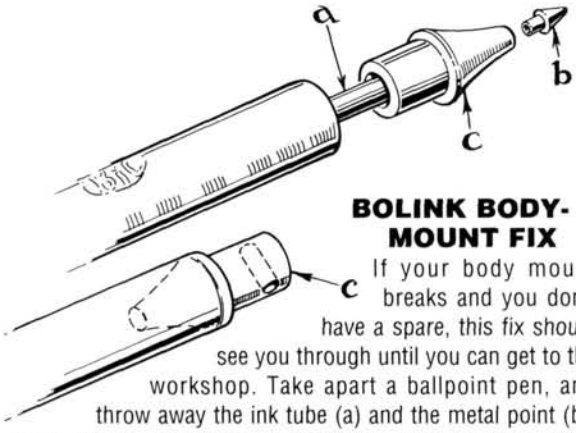
You can add considerable support to your homemade battery pack by gluing or taping Popsicle sticks to the top and the bottom. *Dave Goetz, Manalapan, NJ*



1/10-SCALE-TIRE RACK

This wooden audiotape-cassette holder makes a fine rack for 1/10-scale-car tires and spares.

Willy Golden, Denton, TX



BOLINK BODY-MOUNT FIX

If your body mount breaks and you don't have a spare, this fix should see you through until you can get to the workshop. Take apart a ballpoint pen, and throw away the ink tube (a) and the metal point (b). Then reverse the point (c), jam it back into the pen's body, and glue it with a drop of CA. Drill a hole in the point for the body pin. *Jeff Gray, Canistota, SD*



TWIST-TIE THIRD HAND

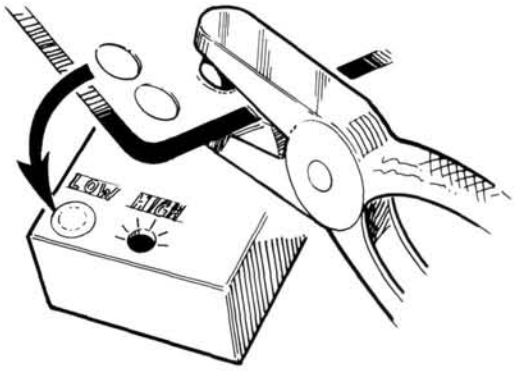
Use a twist-tie to hold your capacitors in place as you solder them to your motor. Just make sure that you position the tie far enough from the solder joint to prevent it from burning.

Steve Shibuya, Jackson, WY



FLEXI-SPOUT FUELING BOTTLE

To fuel your tank, use a clean, empty mustard bottle with a spout. If you slip a flexible, plastic drinking straw over the spout, it will be easier to reach the tank filler. *Tom Bloomfield, Glencoe, MO*



STICK-ON SEALS

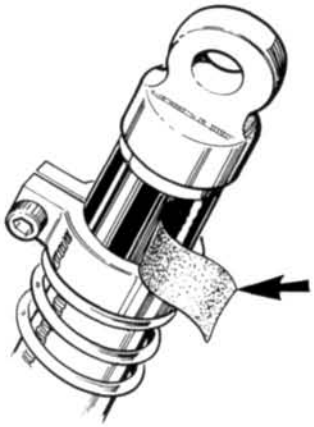
Seal the adjustment holes in your speed controller with dots punched out of an adhesive paper label. For colored dots, use a marker on the label first. *Arturo Salcedo, Los Angeles, CA*

PLEASE NOTE: be sure to print your name and full address clearly on every letter and sketch you send to "Pit Tips." We can't publish many good tips because we don't have the senders' names or addresses.



RECORD THAT TIMING

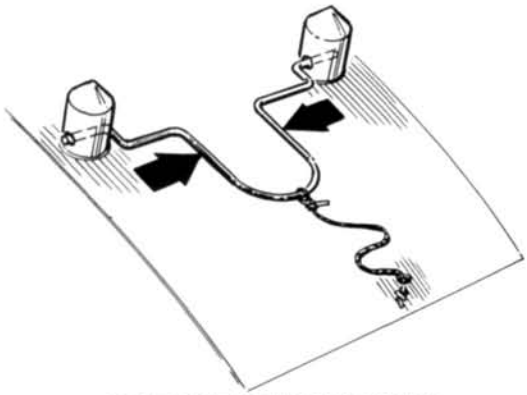
Before disassembling your motor, stick a small piece of white tape on the can; then, using a straightedge and a sharp pencil or pen, carefully make a mark opposite the timing mark on the endbell. This way, you'll be able to reassemble the motor properly. *Pedro Ortet, Macau*



NON-SLIP SHOCK COLLAR

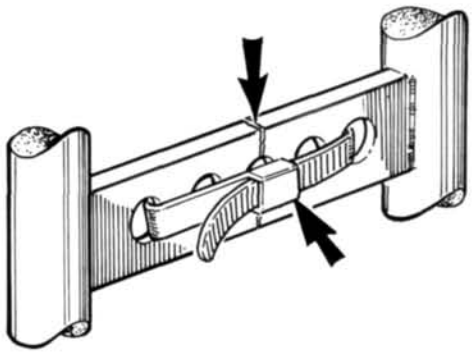
After setting your shocks' spring collars, cut a strip of electrician's tape to the appropriate width, and wind it a few times around the shock body above the collar. This will prevent the collar from being bumped upward in a hard landing.

Chris Bilius, Long Island City, NY



ONE-PIECE BODY CLIP

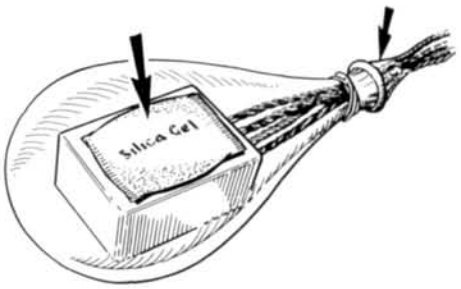
Make this handy body clip out of music wire. A quick squeeze at the arrows *instantly* releases *both* body mounts. Note the thin cord that secures the clip to the body shell so that it won't get lost. It isn't pretty, but who cares? In racing, every second counts. *Alfredo Ysmael, Quezon City, Philippines*



BLACKFOOT BODY-MOUNT REPAIR

To quickly repair cracks in the body mount on your Blackfoot, thread a small cable tie through the mount's holes, and tighten it to bring the parts together.

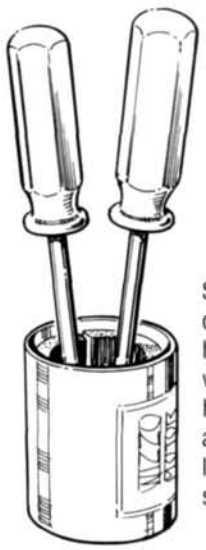
Chris Moore, Highland, IN



DAMP-PROOF ELECTRONICS

Seal your electronics and a packet of silica gel (which absorbs moisture) in a balloon. (Silica-gel packets are available at camera and electronics stores.) Squeeze a little silicone sealant into the balloon's neck, and then bind the neck tightly with a rubber band. When the silica packet has turned blue—indicating that it has absorbed moisture—place it in a warm oven until it dries and is pink again.

Franco Lombardi, Point Ste. Marie, France



TOOL MAGNETIZER

Stand your screwdrivers and hex drivers in an old motor can that still has the field magnets in place. This will magnetize the tools, so they'll hold screws while you insert them in awkward places. Stand the can in a larger glass or cardboard container so that it will stay upright.

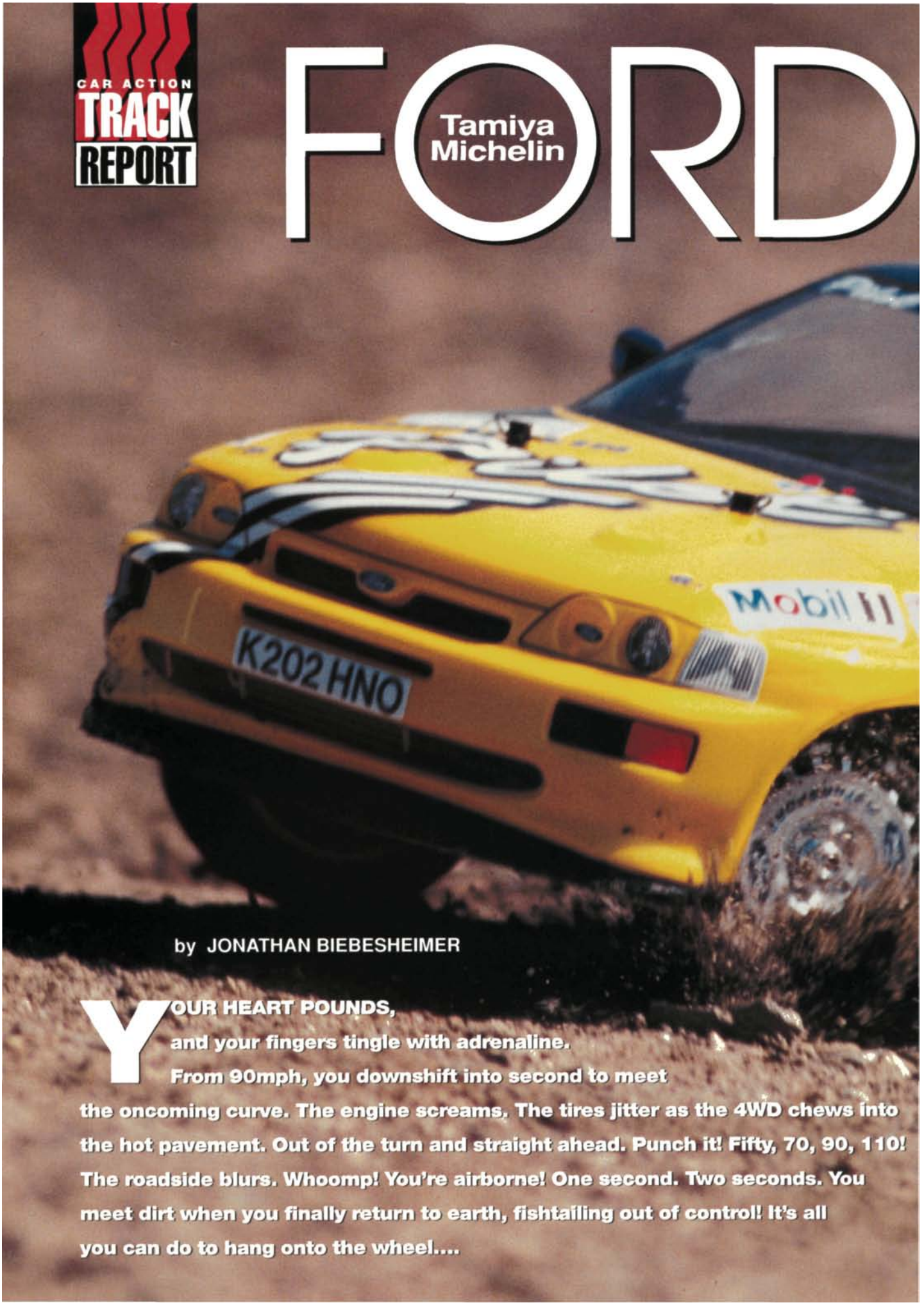
Steve Harvey, Arlington, WA

Radio Control Car Action will give a six-month subscription (or six-month renewal if you already subscribe) for each idea used in "Pit Tips." Send a rough sketch to Jim Newman, c/o **Radio Control Car Action,** 251 Danbury Rd., Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.

CAR ACTION TRACK REPORT

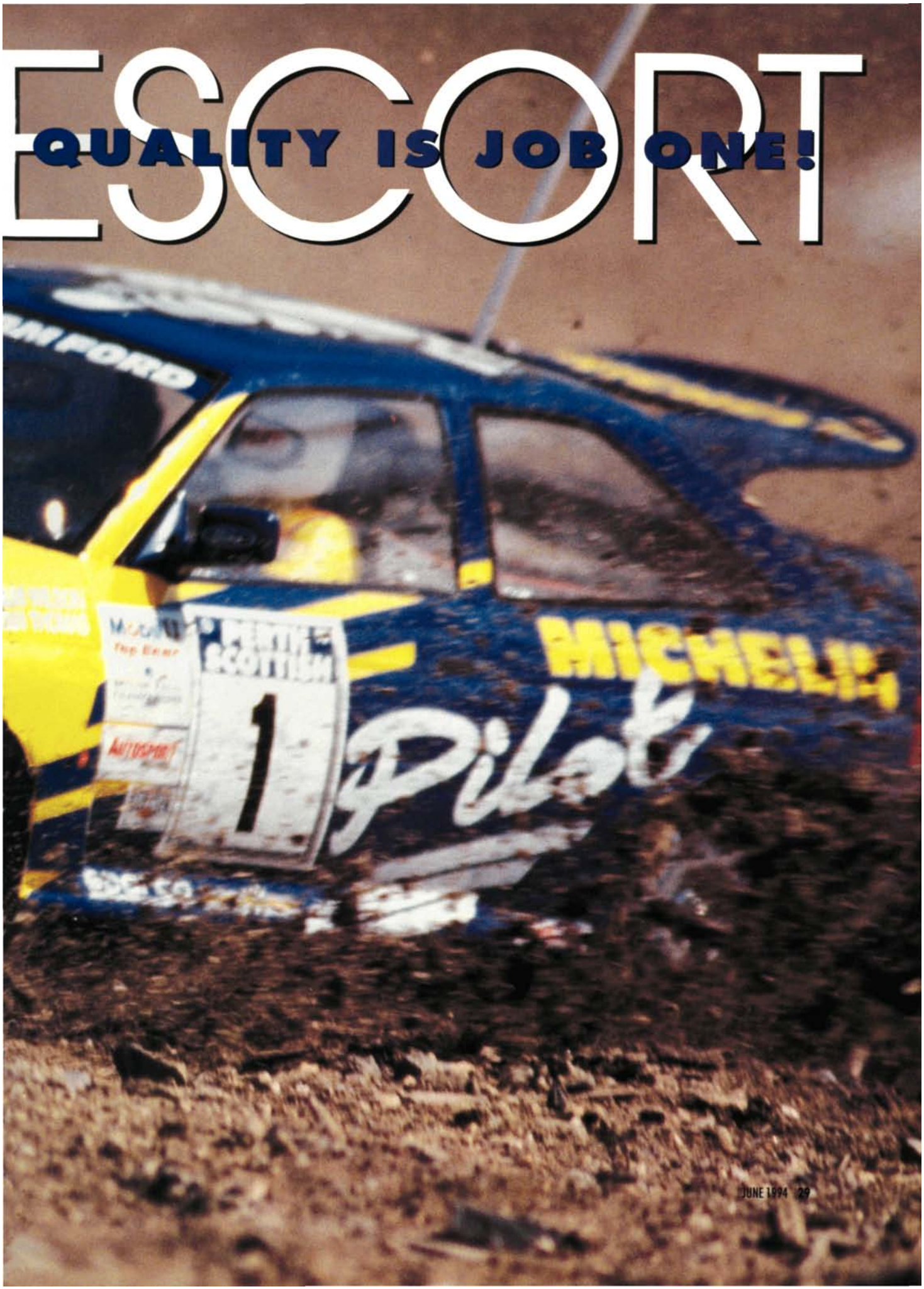
FORD

Tamiya Michelin



by JONATHAN BIEBESHEIMER

YOUR HEART POUNDS, and your fingers tingle with adrenaline. From 90mph, you downshift into second to meet the oncoming curve. The engine screams. The tires jitter as the 4WD chews into the hot pavement. Out of the turn and straight ahead. Punch it! Fifty, 70, 90, 110! The roadside blurs. Whoomp! You're airborne! One second. Two seconds. You meet dirt when you finally return to earth, fishtailing out of control! It's all you can do to hang onto the wheel....


ESCORT
QUALITY IS JOB ONE!
MICHELIN
Pilot
1

TAMIYA MICHELIN PILOT FORD ESCORT RS



Well, OK. So you're not *really* roaring in the full-size 300hp beast that ran in the British National Rally Championships. But with Tamiya's* new replica of the Michelin Pilot Ford Escort, you're in for just about as much action!

The Escort is one in a series of Tamiya rallycross replicas, including the Castrol Honda Civic and the Toyota Celica GT-Four. Although the Ford is a great car for beginners who are ready to step to the next level, more experienced R/C builders and racers will be psyched about such features as a heavy-duty honeycomb chassis, 4WD and a sophisticated suspension that makes for a killer ride, both on pavement and in the rough.

Scale 1/10
Price $240

DIMENSIONS
Overall length ..... 16.75 in.
Wheelbase ..... 10.25 in.
Front width ..... 7.5 in.
Rear width ..... 7.5 in.

WEIGHT
Gross (ready to run) ..... 3.2 lb.

CHASSIS
Type ..... Molded honeycomb tub
Material ..... Plastic

DRIVE TRAIN
Primary ..... Pinion/spur
Transmission ..... Gear
Front differential ..... Bevel gear
Rear differential ..... Ball
Slipper clutch ..... None
Bearings/bushings ..... Plastic and metal bushings

SUSPENSION
F/R: Type ..... 4-wheel independent
Damping ..... Oil-filled, coil-over shocks

WHEELS
F/R: Type ..... Two-piece plastic
Dimensions (DxW) ..... 2.0x1.125 in.

TIRES
F/R ... Semi-pneumatic "rally-block" tread

ELECTRICS
Motor ..... Mabuchi 540 (included)
Battery ..... (not included)
Speed controller ... Mechanical (included, but not installed)

OPTIONS TESTED: Futaba* Magnum Sport radio and FP-S132H steering servo, SCI* Viper ESC, Trinity* 1400mAh MaxZilla pack.

HITS
• Incredible high-quality parts • Clear instructions and easy construction • Tightly sealed gearboxes and diffs • Realistic body molding and decals make for an impressive-looking vehicle • Great design for killer handling both on and off pavement

MISSES
• Motor slightly under-powered • Body clearance off-road

CONSTRUCTION

One of the first things that became very clear after I had cracked open the kit was that these guys were really on the ball in the packing department. The bags of parts, although some were poorly marked or not marked at all, were organized very sensibly; all the screws were together, all the metal parts were together, etc. This made it very easy to take stock of everything and separate items as needed. The instructions were equally sensible. Diagrams were very clear and accurate, and even more helpful was the parts list with scale pictures on the sides of the pages! This made identifying parts very easy and painless—what a treat!

Soon after I had scanned the instructions and separated the pieces, I was into construction. Because of the 4WD, the gearing was rather involved. First on the agenda was building the rear diff. I found it interesting that the rear was a ball diff and the front was a gear diff, and although I did a little research, I couldn't really find out why. My curiosity led me to experiment a bit by swapping the front and rear diffs. I discovered that the two were, in fact, interchangeable, and the switch didn't seem to make much of a difference to performance. Perhaps cutting corners on the front gear diff makes it possible to keep the car in a low price range, even though its other components are of higher quality. During the entire project, I didn't have to trim, cut, or take anything apart to make things fit properly. Especially chunky was the bright red plastic housing for the diffs and the gearboxes. Although the color doesn't affect the quality at all, it sure makes the car look cool!

TRANNY TRICKS

The 4WD made for a fun tranny job! The Ford's motor is mounted in the rear, and it uses a propeller joint to send the power to the front wheels. The kit comes with plastic cups that hold the shaft in place at each end, but I got a tip that a 1-inch piece of fuel tubing works even better. I tried both, and I recommend the fuel tubing. It's a bit of a pain to install, but it keeps the shaft in place much more securely, and it also keeps the joints sealed from dirt and grit.

The Ford is a great vehicle in many respects. The quality of the design, its chunky parts and its flashy looks make it well worth the money.

THE SHOCKING FACTS

With the tranny finished, I had the suspension and electronics to deal with. The suspension came first, and what a suspension it is! The shocks are very similar (at least in appearance) to those used in some other Tamiya replicas, but Tamiya made a few changes to make the Escort's suspension a little more flexible. Although they looked too small to be effective when I built them, I was amazed at how smooth, responsive and supportive the shocks were. The result was a suspension that was stiff enough to handle corners on the pavement, but relaxed enough to really keep the car in

Rally Reality

Rally-car racing is one of the most popular sports in Europe. There are many rally-car courses there and around the world. Each course is a specially designed track—usually a combination of pavement, dirt and gravel—with about 1,000 yards per lap. Generally, six cars race at a time in three- or four-lap qualifying heats. The finals are only two laps long, and this raises the level of the action even more.



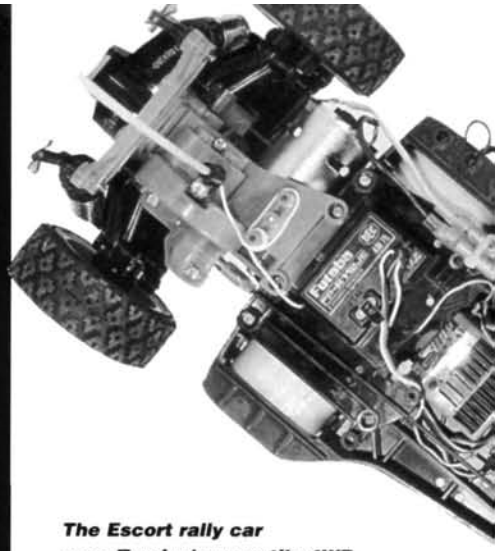
There are several classes of rally cars (specified by letters, e.g., group A or N class), and the rules require that the cars meet certain design standards. For example, the engine block and the body must be made by the same manufacturer, and the engine must have the same number of cylinders as the original. After such requirements have been met, however, modifications to the engine, suspension and transmission are allowed. The result is a variety of 4WD sedans that show off incredible speeds and outrageous handling capabilities.

The Michelin Pilot Team Ford ranks high in its sport, to be sure. Team drivers have racked up victories in Britain, Scotland, Ireland, New Zealand and South Africa. To promote their "Pilot" series of innovative rally tires, Michelin fully endorses the team's efforts. Some cars are fitted with tires that are tailored for gravel and other off-road obstacles, and others have tires that offer maximum grip on pavement. Mobil also lends great support to the team, and the Escorts display the "Mobil 1" logo and numerous Michelin logos.



With their sophisticated 4WD system and a 2-liter, in-line, 4-cylinder DOHC that produces an incredible 300hp, the Escorts are handled by drivers such as Malcolm Wilson, Bryan Thomas, Robbie Head, Campbell Roy and, more recently, Stephen Finlay. Wilson, Britain's leading rally-car driver, is the team's strength in developing and testing Ford cars. He has been the chief test driver for the Escort since its inception in 1990.

Along with the other team members, Wilson and Michelin Pilot Team Ford have announced that they will again be a competing force in the '94 rally season. Wilson and teammate Finlay will drive two group-A Escorts in the Mobil 1 Top Gear British Rally Championship. In addition, Finlay will compete in the Irish Tarmac Championship, and Wilson will strive for first place in the 1994 RAC Rally.



The Escort rally car uses Tamiya's versatile 4WD sedan chassis and rally-type, block-tread tires.

control off the pavement. With a "rally-block"-type tread that's about ⅛ inch deep, the rubber tires really help with the off-road action. And besides, they look cool!

It wasn't until the last steps that the car really began to look like a car. The completed front and rear ends (gearing and suspension) are independent parts until they're attached to the tub-style chassis. It's made of hard plastic, and the inside has a honeycomb pattern that's molded for extra rigidity. Considering its strength, I was impressed by how light it is. The amount of dust and dirt that collected in the honeycomb sections was a bummer, but it's a small price to pay, I suppose.

The only thing I wasn't crazy about was the mechanical speed controller that's included in the kit. It looked very cheap and didn't seem worthy of such a great car. I did want to be fair, however, so I gave it a try. Everything was already positioned, so the installation was a piece of cake. It did the job adequately, but as soon as I "hit the gas," I knew that this car needed an electronic speed controller—something smoother and with better response. Either type of speed controller will fit, so the choice is up to you. Instead of installing the electronic speed controller where the mechanical one was (on top of the radio tray), I swapped it with the suggested receiver position inside the tub; this allows easier access to the receiver and eliminates the need to cut a big chunk out of the cockpit.

WHAT A BODY!

The Ford body comes in one piece, and the rear fins and mirrors are added to it. But first came the painting. I was just beginning to get used to spray painting when I found that the colors I needed for this car weren't available in a spray in the U.S. You must use the

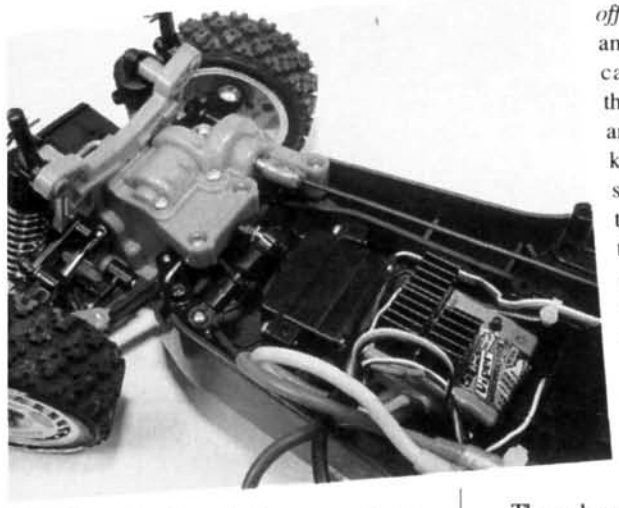
exact colors Tamiya calls for (Tamiya brand, of course!) to match the decals and dyed attachments. I was lucky to find the same colors in bottles at a local hobby shop, and I got my first experience using a brush to paint a body. I was skeptical when I heard that the brush strokes don't show through, but sure enough, even the biggest brush marks vanished when I looked at the body from the outside! The big advantage I found with painting with a brush was that I didn't need tons of masking. It also cut down on the paint fumes, which can be a real drag in winter when you can't open any windows!



Applying thin coats was a bit difficult. The coats ended up very thick and made a lot of my masked edges peel oddly, so they weren't quite as sharp as I would have liked them to be. Thinning the paint is an option, but not knowing how and unwilling to wreck the only body I had, I didn't do much experimenting.

Then...the decals. Would you believe there are 90 of these things? That's right, 9-0! It took me several hours alone just to put them on, partly because I was being very obsessive about cutting as close to the decal printing as I could. Even though it takes a little longer, I recommend that you do this—especially with the larger decals. Believe me, the results are worth it!

And while we're talking about being obsessive, painting the car's one-piece cockpit was a project in itself! So break out the Testors, and have a ball! First, I sprayed a very, very light coat of flat black over the entire cockpit. I was told that it gives the colors some depth (especially on the driver's clothing), and it also fills in any hard-to-reach spaces. I was pleased with the result, although it meant having to add extra coats to certain spots (such as flesh parts) that looked a little funny. One final detail was spraying the wheels chrome. Again, for the realism it adds, it's worth the extra time. I suggest that you paint the wheel parts before you assemble them. This way, the paint will coat everything.



To steer the Escort, I chose a Futaba 132H servo. Note the small piece of fuel tubing placed over the end of the drive shaft; this helps to keep the propeller shaft in place and keeps dirt out.

PERFORMANCE

After spending several days assembling this machine, I was itching to drive it. I was lucky to have a warm, dry day, and I took the car to a school parking lot that had just been paved. I checked my servos and let it rip! What a ride! The car excelled at cornering. I tried absolutely everything I could to spill it, but I just couldn't do it! Even at top speed, it handled incredibly, with the suspension giving just slightly for smooth turns. Sure, but how much can it take *off* the pavement? Again, I was amazed at how responsive the car was when I launched it through dirt, sand, low-cut grass and even wood chips. Now, I know that R/C vehicles and snow don't mix, but I just had to try! I found a spot where there was a dusting of snow on top of ice, and that's where the 4WD really shone. The car dug right in, and when it was up to speed, it handled remarkably well, doing awesome donuts and sideways slides without completely losing control.

The only complaint I had about the car's performance was its speed. The Ford comes with a standard 540 motor. Although it didn't stop me from having a great run, it left me thinking about how much better the car would be if I installed a modified motor for that extra bit of juice it seemed to lack on the straightaways. A friend had installed a really hot modified motor in a similar model, and he said that it made the car really smoke! About the only drawback to throwing in a modified is that it cuts down on the run time. Decisions, decisions....



A Futaba receiver picks up the radio waves, and an SCI Viper ESC handles the throttle.

Finally, I made one tiny modification that helped the car dramatically in subsequent runs. I found that the body's front end (the low molding under the grill) was really digging into things off-road. The Ford isn't really meant for big-time off-road thrashing (leave that to the monster trucks!), but I found that cutting the bottom ⅜ inch of molding off the front improved its performance on bumpy terrain and off jumps as high as sidewalk curbs. You lose a bit of the slick front molding, but it would just get chewed up anyway.

The Ford is a great vehicle in many respects. The quality of the design, its chunky parts and its flashy looks make it well worth the money. Although the car is easy enough for beginner to intermediate R/C'ers to build, it offers many great features that will satisfy those who are more experienced. It's a great project with a lot of detail, and it's a blast to drive. So go for it! Open the box, and step into the thrills of rally-car racing!

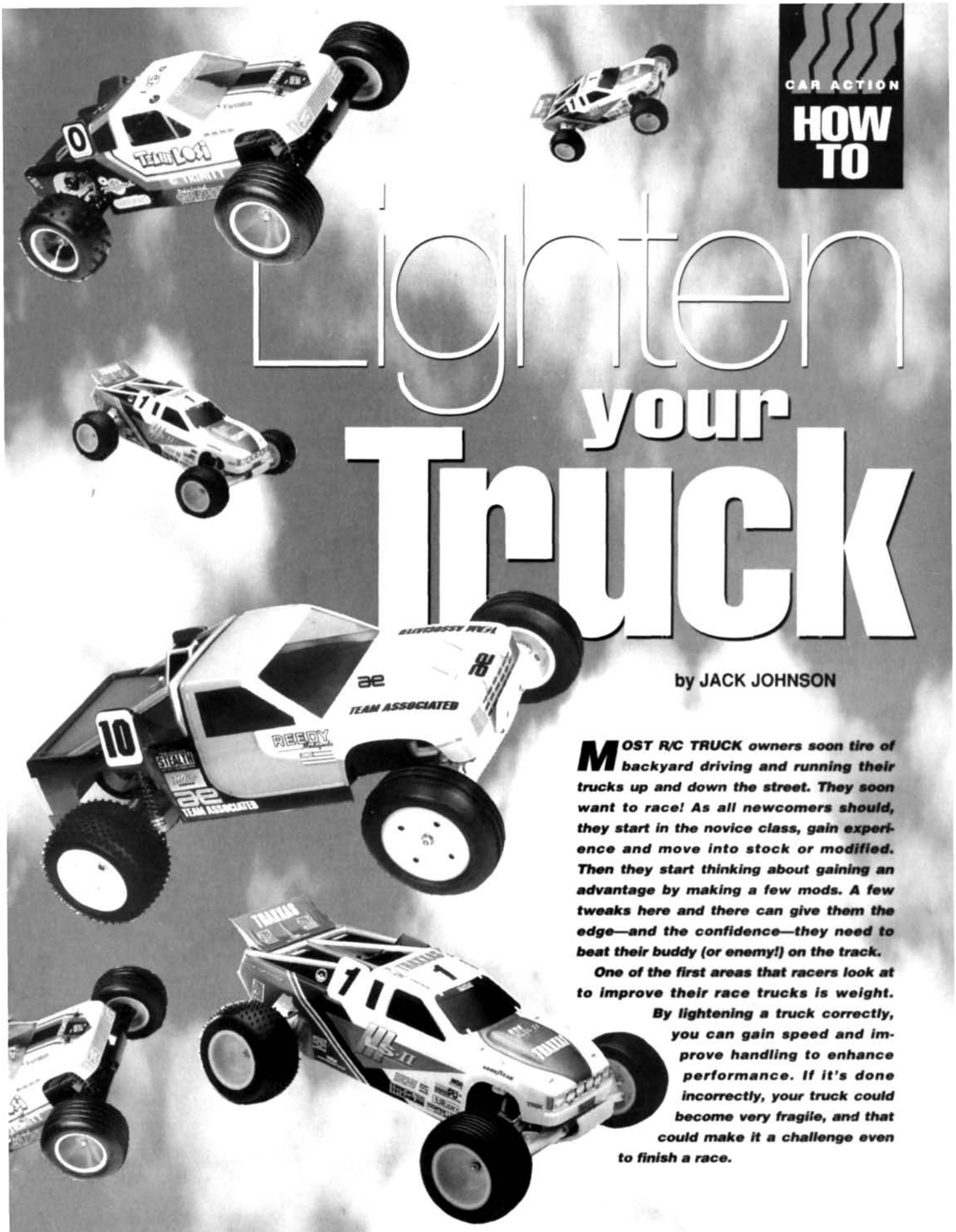
**Here are the addresses of the companies mentioned in this article:*

Tamiya America Inc., *2 Orion, Aliso Viejo, CA 92656; (714) 362-2240.*

Futaba Corp. of America, *4 Studebaker, Irvine, CA 92718; (714) 455-9888.*

SCI Corp. of America, *P.O. Box 13099, Sarasota, FL 34278.*

Trinity Products Inc., *1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.* ■



CAR ACTION

HOW TO

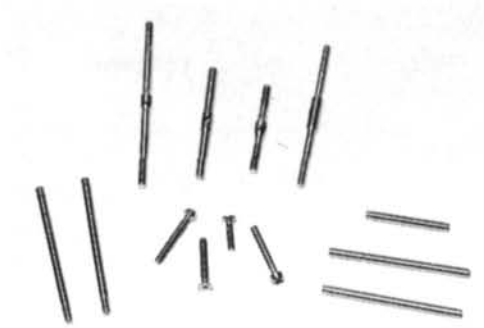
Lighten your Truck

by JACK JOHNSON

***MOST R/C TRUCK** owners soon tire of backyard driving and running their trucks up and down the street. They soon want to race! As all newcomers should, they start in the novice class, gain experience and move into stock or modified. Then they start thinking about gaining an advantage by making a few mods. A few tweaks here and there can give them the edge—and the confidence—they need to beat their buddy (or enemy!) on the track.*

One of the first areas that racers look at to improve their race trucks is weight. By lightening a truck correctly, you can gain speed and improve handling to enhance performance. If it's done incorrectly, your truck could become very fragile, and that could make it a challenge even to finish a race.

WHEN "LIGHTENING" STRIKES



An easy way to shed weight: titanium parts are lighter and stronger than steel pieces are, but they're more expensive.

Racers have many different ideas on lightening trucks; some work well, others don't. Here, I'll show you some easy ways to take weight off your truck without sacrificing strength or performance.

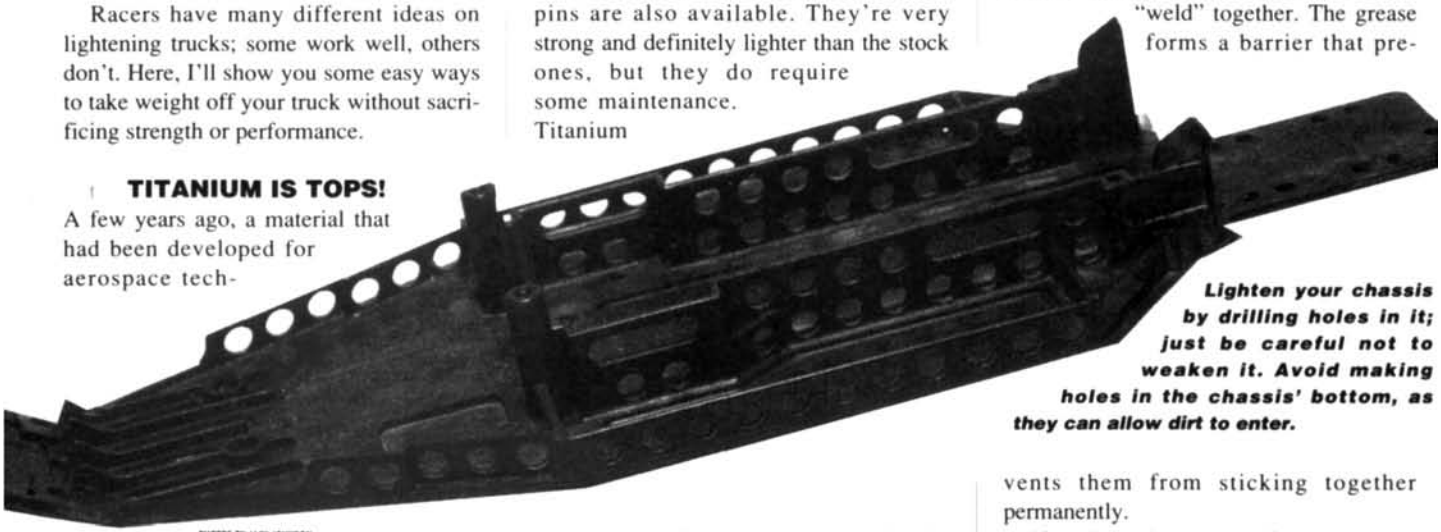
TITANIUM IS TOPS!

A few years ago, a material that had been developed for aerospace technology became mainstream, and manufacturers from many areas were soon scrambling to make use of it. What is it?—titanium.

Parts made of titanium are lighter and many times stronger than the standard parts that they replace. So, when lightening your truck, getting titanium replacements is probably the best way to start.

Titanium turnbuckles are common; they're easy to find and a breeze to install. They're very strong, too—so strong that some manufacturers offer a lifetime guarantee. They say that if you break one, you should just send it back, and they'll send you a free replacement. Titanium screws and hardware, such as ball studs, nuts, etc., are also a safe bet.

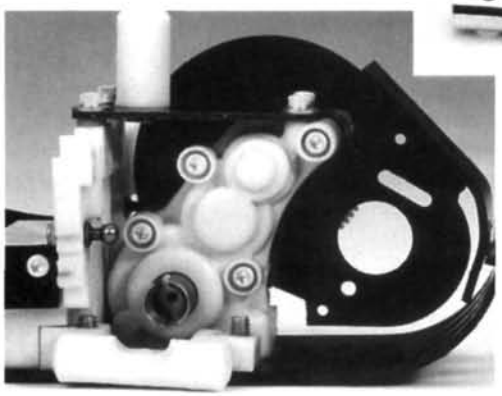
Titanium shock shafts and hinge pins are also available. They're very strong and definitely lighter than the stock ones, but they do require some maintenance. Titanium is porous, so dirt can work its way into it, making your shocks and suspension parts bind. If you polish titanium hinge pins and shock shafts from time to time, you'll avoid this problem. If you don't like to work on your truck, but you just want to race without worrying about maintenance, avoid titanium pins and shafts.



PHOTOS BY JACK JOHNSON

Definitely avoid lightening chassis braces or pieces that tie parts of the chassis together. These pieces are subjected to considerable load and must be strong.

Lighten your chassis by drilling holes in it; just be careful not to weaken it. Avoid making holes in the chassis' bottom, as they can allow dirt to enter.



The steel screws that normally hold this transmission together have been replaced with those of lightweight aluminum.



Using aluminum parts instead of steel ones also saves weight. Aluminum isn't as strong as steel or titanium, so be careful where you use it. These aluminum axles from Associated replace the stock axles.

TAKE CARE WITH ALUMINUM!

I've seen many racers swap every steel screw on their trucks for ones made of aluminum. Aluminum is light, so it saves weight, but it isn't very strong. Aluminum screws bend and break more easily, so they should be used only in areas that don't need very strong screws. It's OK to use them to hold a plastic part that's bolted to the chassis, as long as the part is held by *more than one* screw. If the part relies on the strength of one screw, I recommend that you stick with a standard steel one. And *never* use aluminum screws to mount your shocks—top or bottom. They simply aren't strong enough and will bend or even break.

Before putting an aluminum screw into an aluminum part, put a little grease on its threads. This might sound crazy, but if you don't do it, the two aluminum pieces will "weld" together. The grease forms a barrier that prevents them from sticking together permanently.

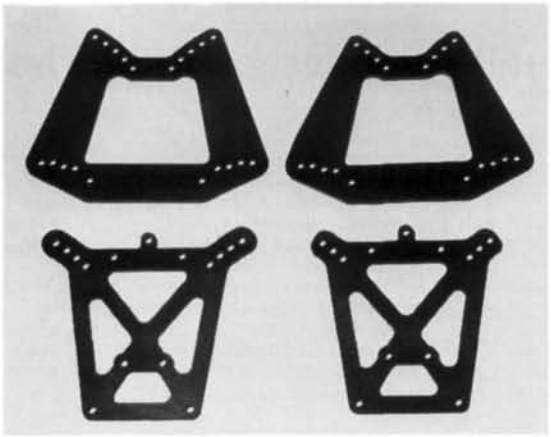
If you're using a small flat-head screw that requires a 1/16-inch Allen wrench, make sure that the wrench isn't worn or rounded. This is where a high-quality wrench made out of a drill blank comes in handy. Unlike the small L-shaped wrenches, drill-blank wrenches don't become worn and rounded.

WHAT ABOUT GRAPHITE?

Graphite (the composite) was also developed by the aerospace industry, and it's best known for its stiffness. Parts made of graphite *are* stronger than those of fiberglass and most molded materials, but they're more susceptible to crash damage.

Graphite makes a strong, lightweight chassis, but because it's a more conductive material, it can cause more radio interference than chassis made from other materials. Because of this conductivity, care must be taken to ensure that the battery's shrink-wrap remains in place, or the cells can short out.

Many manufacturers make use of other chassis materials, such as aluminum or high-tech, molded composites. Most of



If you don't think that you'll use the outside holes in your front or rear shock towers, remove them.

these newer chassis designs are nearly as light and are as strong as those made of graphite. It's up to you if you want to spend the extra money for graphite pieces. Small graphite pieces, like braces and shock towers, are recommended, but keep in mind that they will, in most cases, be more brittle than the pieces that you replace.

CHOP TILL YOU DROP?

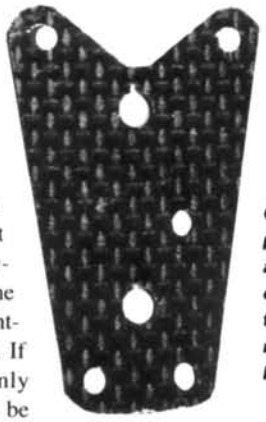
Sometimes, the "lightweight" parts that manufacturers offer just aren't light enough, so we lighten them by removing material. You don't need a machine shop to do this; many parts can be lightened with a drill and/or a Dremel tool. If you're careful to remove material only from the *right* places, your parts will be lighter but just as strong.

Remember these tips:

• Keep in mind what's attached to what and where. Try to visualize how important each area is to a truck's overall strength. Remove material only from areas that you think aren't crucial for strength. It isn't worth saving a couple of grams if you risk not finishing a race because of parts breaking.

• Don't drill too close to any edge, or you'll weaken the part. Shock towers can be lightened by drilling holes in them, but drill them as far away from the part's edges as possible.

• Avoid drilling in corners—again, to avoid reducing a part's strength. Any part, such as a shock tower, is subjected to the greatest load near its corners; drilling holes near the corners will weaken the part and lead to breakage.



Graphite replacement parts may be lighter and stiffer, but take care when you use them, as they're more susceptible to breaking.

• Concentrate on lightening larger parts; they're heavier, so there's more to remove. The rear bulkhead is a good example. It usually has some excess material that can be removed. Drill holes, or file or sand away material, but keep my tips in mind; don't weaken the part!

If you don't think that you'll ever use the outside holes on your front and rear shock towers, grind the tower down to the inner edge of the hole that you don't use. Just remember not to grind too close to the next hole.

Be extra careful when you lighten the chassis; it's your truck's frame—its main structure. Drill too many holes or lighten it in the wrong places (in corners and near edges), and you'll weaken it by making it more flexible. If a truck's chassis flexes too much, the truck doesn't handle as well. Think carefully about this before you start drilling and filing.

Don't drill holes in the bottom of the chassis unless you plan to use some sort of a belly pan or undertray all the time. Dirt will get through the holes, and things could get really messy when the track is muddy!

(Continued on page 177)



When you use aluminum screws, use a high-quality, drill-blank wrench to prevent stripping the screw head.

TRINITY®
Evolution 10

MAGIC TRICKS

by Joel "Magic" Johnson®
IFMAR World Champion

TRINITY INFORMATION SERIES

Have you ever read the instructions to a car kit and wished that you could watch someone building certain parts of the car just to get it right? Wait no more: coming this spring from Trinity Products is an informative series about the EV10 line of race cars. Your humble host will be me, Joel Johnson. I put this video together to sort out some of the difficulties people are having with assembly and basic setup of the EV10 line of cars.

The video starts with the Trinity Reactive Caster™ front end. I show you how to assemble and tune the front end—everything from which threads go where to how much caster and camber is recommended. This should clear up any questions on the basics of the front end.

Next, I discuss the proper assembly of the rear shocks. These shocks are vital to the proper handling of the car and should always be checked. I show you how to properly fill and bleed the shocks, and how they should perform after they are built. We also cover what oil should be used.

The third item covered in the video is the rear links. I show you how to adjust these to proper length, and how to keep them as free as possible. After all, a bind in these links can severely affect the handling of the car.

The last part of the video discusses the basic setups for both the EV10 and EV10ss—everything from camber, caster and rear-spring preload to how much cross weight to run. If you are a new owner of a Trinity EV10, EV10ss, or even an EV10 Left Side Drive, this video is a fine addition to help with tuning and building the EV10 series of cars.

Good luck and good racing!

Joel "Magic" Johnson,
Trinity R&D

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R/C CAR ACTION'S

Side By Side '94 Race Truck Guide

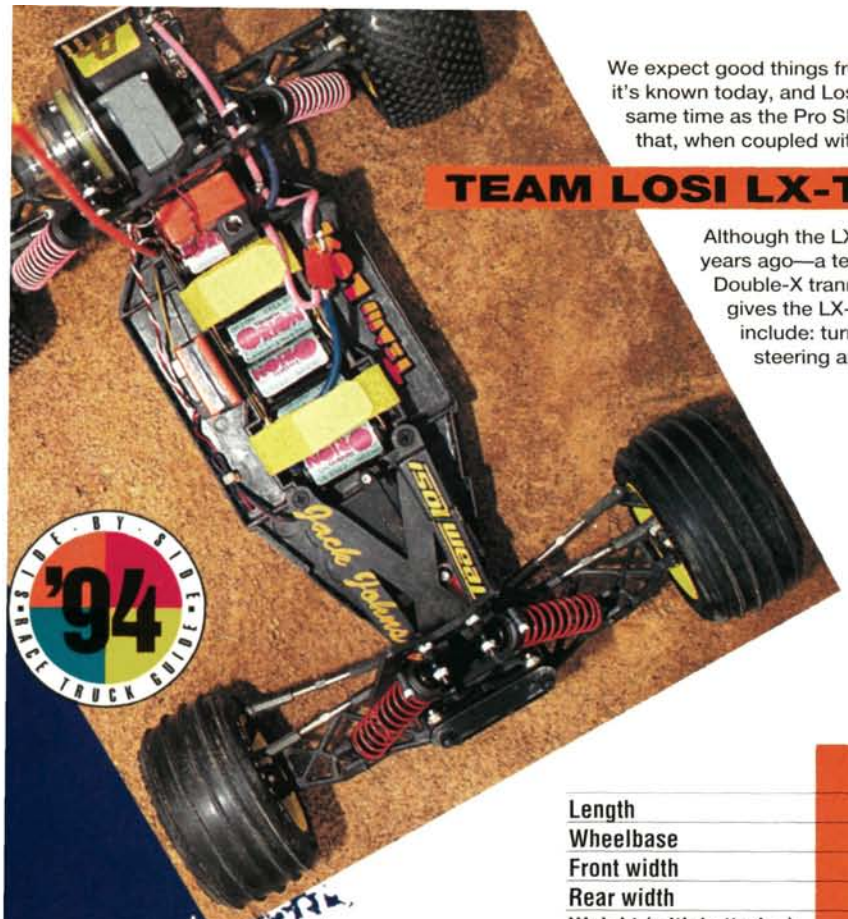


RACE TRUCKS are as American as apple pie and about as much fun as you can have on four wheels. Trucks have big tires and they're *really* wide, so both novice and expert drivers can float over bumpy terrain with ease. Even the most serious buggy driver can't help cracking a grin when handed the transmitter of a race truck.

Trucks have a lot going for them, and it's no wonder that this form of racing has become very popular, which is why we've put together this, *Car Action's '94 Race Truck Guide*. Within, you'll find data and specs on four of the most popular trucks, expert advice on how to set up your truck, and pro tips on your truck's special speed-controller, tire, battery, motor and servo requirements. If you own a race truck or are thinking about getting one, then this is a must read!







TEAM LOSI LX-T

We expect good things from the company that virtually invented the race-truck class as it's known today, and Losi doesn't disappoint. The LX-T was introduced at almost the same time as the Pro SE buggy. Both use the same, molded-fiber/matrix resin chassis that, when coupled with an upper stiffener plate, make a very rigid platform. The LX-T also boasts a full set of Losi's Hard Body, hard-anodized shocks and very long suspension arms molded of a flex-resistant material the company calls "Stiffezell." Although the LX-T remains almost unchanged since its introduction nearly two years ago—a testimony to its original design—Losi has seen fit to include the Double-X tranny in all new kits. This, combined with the Hydra Drive system, gives the LX-T one of the slickest drive trains around. Its other features include: turnbuckle suspension linkage, Silitech shock oil, dual-bellcrank steering and one-piece wheels with dirt shields.

Highs
- Parts fit and finish are excellent; no hand-fitting is required.
- Double-X tranny now included at no extra cost.
- Good kit tires; will work on most tracks.
- Versatile suspension—many setup possibilities.

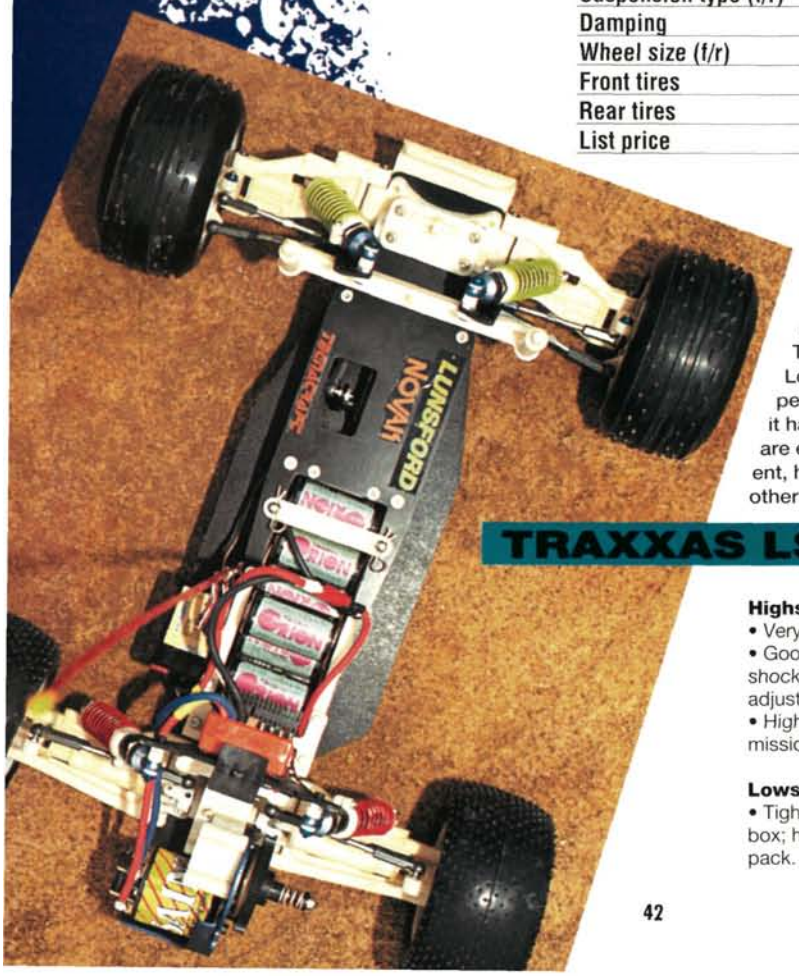
Lows
- In our test, it's the heaviest of the four trucks.

The final word
A user-friendly truck with state-of-the-art features. Great parts quality.

Recommended after-market parts
- MIP CVD drive shafts.
- Lightweight, titanium hinge pins and turnbuckles.
- Jammin' Products servo mount/steering brace.

More info
see the Track Report in the September '92 issue of *Car Action*.

	TEAM LOSI LX-T	TRAXXAS LS-II
Length	16 in.	18.25 in.
Wheelbase	11.5 in.	11.5 in.
Front width	12.5 in.	12.25 in.
Rear width	12 in.	12 in.
Weight (with batteries)	4 lb., 1.2 oz.	3 lb., 15 oz.
Chassis type	Molded with upper brace	Double-deck plate
Chassis material	Matrix-fiber resin	Graphite (lower); fiberglass (upper)
Differential type	Ball	Ball
Bearings/bushings	Bearings	Bearings
Suspension type (f/r)	Lower A-arm/upper link	Lower A-arm/upper link
Damping	Oil-filled, coil-over shocks	Oil-filled, coil-over shocks
Wheel size (f/r)	2.2x2 in.	2.2x2 in.
Front tires	Ribbed	Pro Trax 4780 multi-rib
Rear tires	6-row spikes	Pro Trax 4790 6-row spike
List price	$329.95	$335



TRAXXAS LS-II

The Traxxas LS-II is the only truck in our guide that isn't based on a buggy; it has virtually none of the same components as the TRX-3 car. A long-wheelbase graphite chassis, a molded battery compartment and a fiberglass upper plate combine to form Traxxas's Zero Flex chassis. Zero flexing? Not quite, but very close. Long, molded arms and hard-coated shocks mean a suspension that performs very well on bumpy tracks. The LS-II is also very adjustable; it has many camber-rod locations, and rear toe and anti-squat angles are easily changed. Also, the LS-II is one of two trucks that have a different, higher transmission ratio to compensate for their larger tires (the other is the Losi LX-T). An externally adjustable ball diff and a friction-slipper clutch, plus two-piece, molded slider shafts round out the drive train.

Highs
- Very strong chassis.
- Good suspension; shocks work well; very adjustable.
- High (2.72:1) transmission ratio.

Lows
- Tightly fitting battery box; hard to remove the pack.
- Chassis is too narrow to mount ESC and receiver flat.

The final word
A good performing truck with a lot of features—and a great-looking body. "Unruly" Rulon slipper pegs; perhaps a more conventional design is needed?

Recommended after-market parts
- A&L dogbone kit

More info
see the Track Report on the LS-II in the September '93 issue of *Car Action*.

ASSOCIATED RC10T

The RC10T is based on Associated's popular RC10 buggy, and they share many features: aluminum-tub chassis, hard-coated shocks and Stealth transmission. But, owing to its long, molded-nylon suspension arms, the 10T has a much wider stance than its buggy cousin. The truck also sports a longer wheelbase (for increased stability) and longer front shocks (for increased suspension travel). Since introducing it in '91, Associated has made several "running" changes to this truck kit, the most significant being improved arms and shock towers. The 10T also features an adjustable servo-saver/bellcrank assembly, turnbuckle suspension linkage, a friction-slipper clutch, and universal-joint dogbone driveshaft.

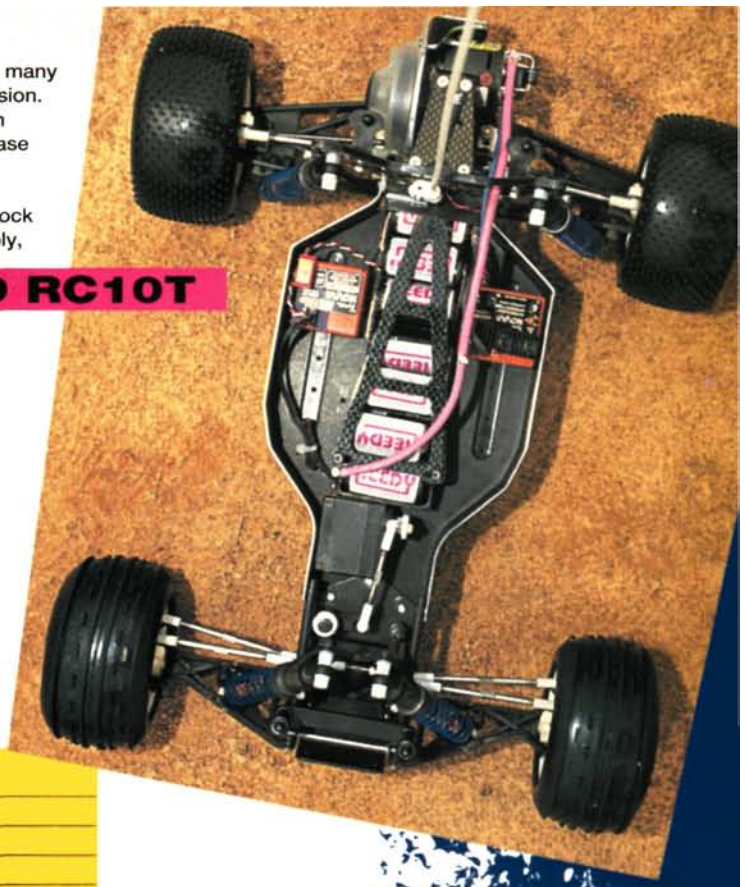
Highs
- Excellent suspension provides lots of steering and stability.
- Stealth gearbox remains a benchmark among car and truck transmissions.
- Kit-supplied tires provide good traction on most surfaces.
- Team drivers compete—and win—with essentially the same RC10T as you can buy.

Lows
- Aluminum tub isn't as rigid as some newer designs from other manufacturers.
- Associated makes great silicone shock oil. Why not include some with this kit?

The final word
The RC10T epitomizes Associated's philosophy of getting it right the first time. This truck is as competitive today as it was in '91.

Recommended after-market parts
- MIP CVD drive shafts
- Team Losi Hydra Drive kit for the Stealth transmission.

More info
see the Track Report in November '91 issue of *Car Action*.



Associated RC10T	SCHUMACHER STORM 2000
15.75 in.	14.5 in.
11.375 in.	11.3 in.
12.375 in.	12.25 in.
12.5 in.	12.25 in.
3 lb., 9.5 oz.	3 lb., 13 oz.
Tub	Bi-level box
Aluminum	Fiberglass
Ball	Ball
Bearings	Bearings
Lower A-arm/upper link	Lower A-arm/upper link
Oil-filled, coil-over shocks	Oil-filled, coil-over shocks with variable damping
2.2x1.75 in.	2.2x2 in.
Staggered ribs	Staggered ribs
Spikes/paddles	Mini-spikes
$335	$399.95

SCHUMACHER STORM 2000

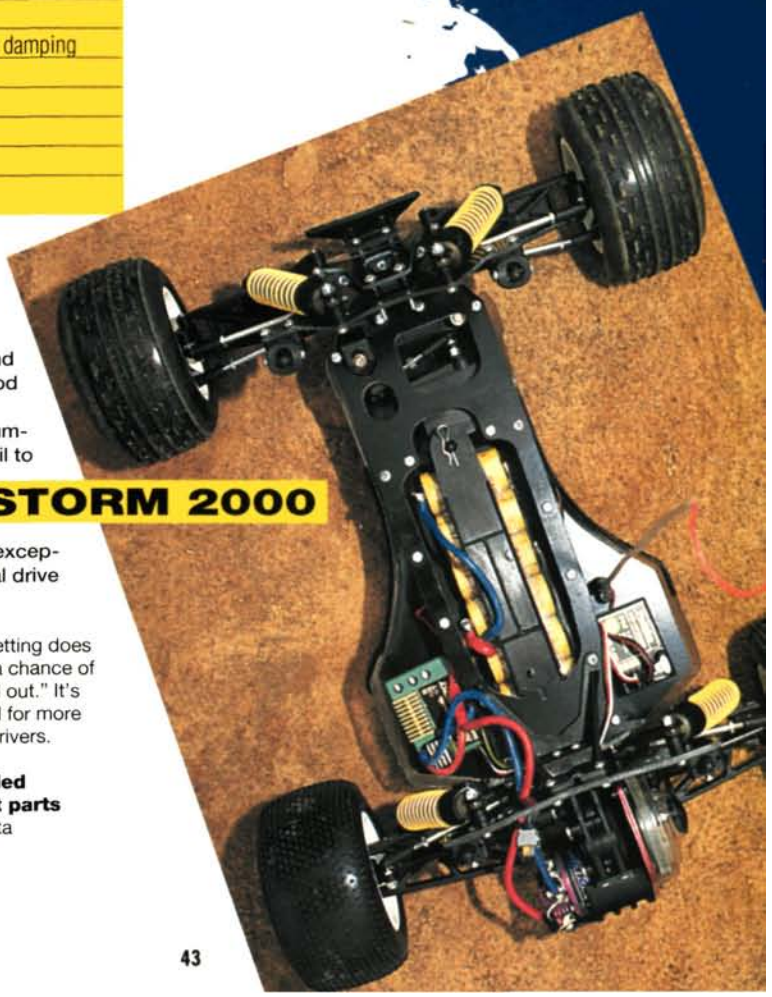
The Storm is a radical new design that's based on Schumacher's Cougar 2000 racing buggy. The truck features bi-level fiberglass chassis plates that are held together by molded side rails to form a rock-steady structure. The Storm also boasts what is perhaps the most adjustable suspension ever seen on a race truck. Front rake, camber and toe-in can be changed, as can the truck's wheelbase, its rear camber-rod location, rear toe-in and anti-squat. Also, the Storm comes with Schumacher's variable damping shocks, in which you can adjust the number of holes in the piston from outside the shock. Instead of changing oil to alter damping, you can alter the shock's valving quickly. Schumacher's new gear-drive transmission—first seen in the Cougar 2000—provides exceptional cornering and acceleration, and the truck's unique slider/universal drive shafts allow the suspension to operate more freely over bumpy terrain.

Highs
Versatile chassis provides expert racers with enhanced adjustability.
- High-quality, smooth diff and drive train.
- Rigid chassis allows the suspension to operate more effectively.
- Externally adjustable shock valving.

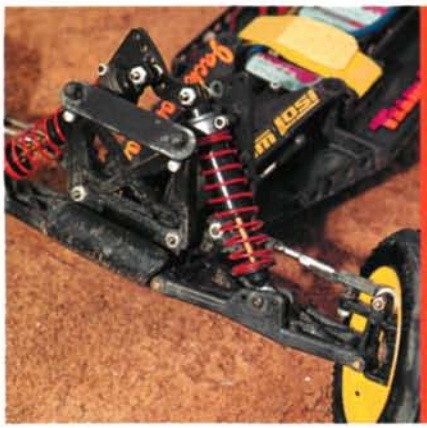
Lows
- Complexity and number of adjustments perhaps too much for novices.
- Our prototype exhibited bump-steer.

The final word
This is perhaps the most advanced design on the market, but if you don't know which setting does what, there's a chance of getting "dialed out." It's recommended for more experienced drivers.

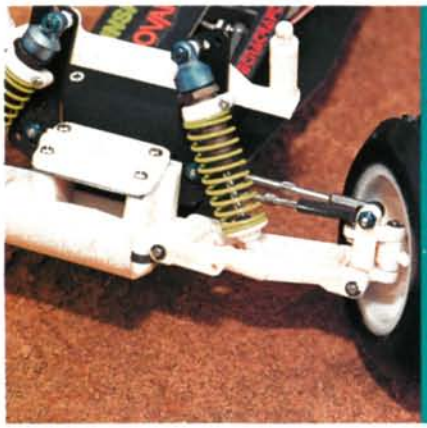
Recommended after-market parts
Insufficient data



SUSPENSION



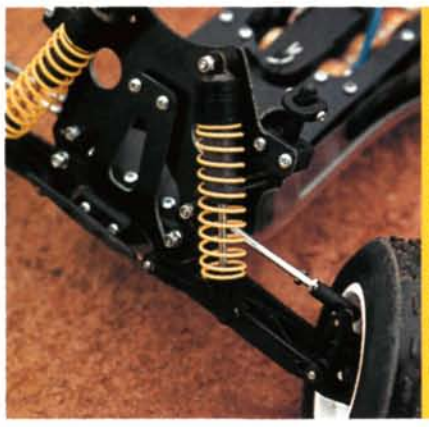
The Team Losi LX-T has long A-arms molded of the company's Stiffezell material. Hard-anodized, Hard Body shocks have precisely fitting three-hole pistons that are available in a number of sizes to allow additional tuning. Steel turnbuckles are standard, and the shocks and the upper camber rods can be mounted in a variety of positions.



The Traxxas LS-II has hard-anodized shocks that have a rubber diaphragm seal to prevent air from mixing with the oil. The front suspension is straightforward, with just a few choices for shock and camber-rod positioning. The suspension arms are molded of a stiffer material than those on previous Traxxas trucks.



The design of Team Associated's RC10T suspension is also very simple. Medium-length, hard-anodized and Teflon-coated shocks are mounted on a thick, newly redesigned front shock tower. The suspension arms are now molded of a more rigid material, so flexing is kept to a minimum. For more consistent damping, new, two-hole shock pistons fit more tightly.



The suspension on Schumacher's Storm 2000 can be adapted to most track surfaces. Front rake angle, roll center and shock angle can be altered. Schumacher's hard-coated, variable-damping shocks allow the piston valving to be changed from the outside. Also, the front shock tower is braced to prevent flexing.

Winning Truck Setups

In truck racing, setup is very important. When we were at the '94 Florida Winter Championships, we were able to coax

TEAM LOSI LX-T



FRONT SUSPENSION
Shock oil 25WT
Pistons .....Three-hole, 56
Springs .....Losi Red
Toe-in .....1 to 2 degrees
Net caster .....30 degrees
Camber .....2 degrees negative

REAR SUSPENSION
Shock oil 30WT
Pistons .....Three-hole, 55

TRAXXAS LS-II



FRONT SUSPENSION
Shock oil 30WT
Pistons .....One-hole
Springs .....Losi Green
Toe-in .....0 degree
Net caster .....30 degrees
Camber .....2 degrees negative

REAR SUSPENSION
Shock oil 30WT
Pistons .....One-hole

TEAM ASSOCIATED RC10T



FRONT SUSPENSION
Shock oil 35WT
Pistons .....Associated no. 3
Springs .....Associated Blue
Toe-in .....3 degrees
Net caster .....30 degrees
Camber .....2 degrees negative

REAR SUSPENSION
Shock oil 30WT
Pistons .....Associated no. 2

SCHUMACHER STORM 2000



FRONT SUSPENSION
Shock oil 35WT
Pistons .....Four-hole
Springs .....Schumacher Yellow
Toe-in .....3 degrees
Net caster .....25 degrees
Camber .....1 degree negative

REAR SUSPENSION
Shock oil 40WT

some top drivers into revealing their hot truck setups. Caution: these settings are for a particular track, and they might not be ideal for every situation. Follow these setups, and you'll be much closer to being dialed in.

Jack Johnson's setup



Springs.....Losi Pink
Anti-squat.....Pivot support no. 2

TIRES
Front.....Losi low-profile rib
Rear.....Losi IFMAR pin

MOTOR..Peak Performance 13x2
GEARING.....18/88

Tim Moon's setup



Springs.....Losi Red
Anti-squat.....0 degree

TIRES
Front.....Pro-Line 8065
Rear.....Losi mini-pin

MOTOR..Peak Performance 14x4
GEARING.....18/87

Mark Pavidis's setup



Springs.....Associated Blue
Anti-squat.....2 degrees

TIRES
Front.....Pro-Line 8065
Rear.....Pro-Line mini-pin

MOTOR.....Reedy Sonic 13x2
GEARING.....16/87

Jamie Booth's setup

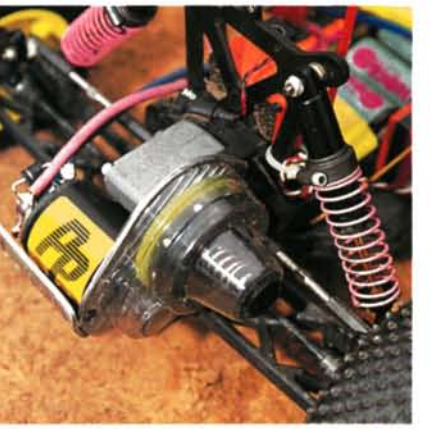


Pistons.....Four-hole
Springs.....Schumacher Yellow
Anti-squat.....1½ degrees

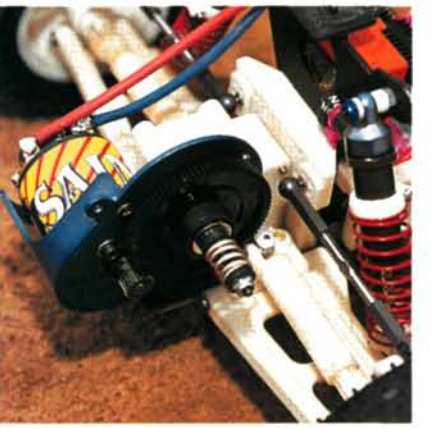
TIRES
Front.....Schumacher Gold Rib
Rear.....Pro-Line Flat Fuzzies

MOTOR.....Corally 13x3
GEARING.....16/95

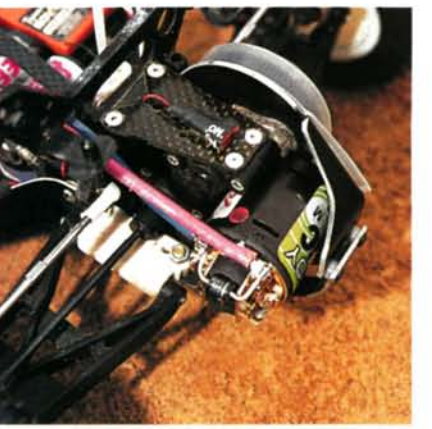
TRANSMISSION



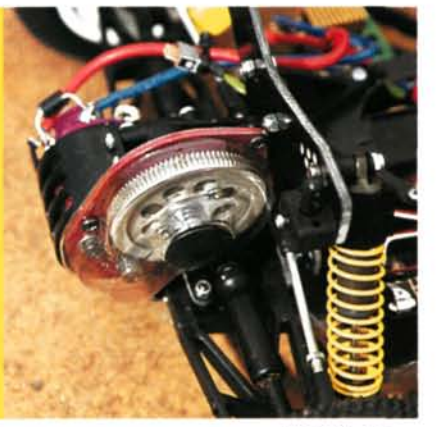
Losi's LX-T comes with the Double-X tranny as standard equipment. In addition to its Hydra Drive traction-control system, the truck version of the Double-X tranny has a higher output ratio (2.61:1 compared with the buggy's 2.19:1) to deal with the larger wheels and tires. Universal-joint drive shafts are included.



The Traxxas LS-II's tranny also has a higher output ratio. The stock truck's slipper clutch has small Rulon pegs, and its pressure rings have a large diameter. The truck shown has a shaft that allows the use of Losi's slipper clutch and Hydra Drive system. Molded slider shafts transfer power from the transmission to the wheels.



The RC10T is outfitted with Associated's Stealth transmission, which has an excellent ball differential, a friction-type slipper clutch and an output ratio of 2.25:1. The graphite brace shown is an optional piece, and it helps to prevent the rear of the chassis from flexing. Universal-joint drive shafts are now standard equipment.



The Storm is only the second Schumacher off-roader to make use of a new, gear-driven transmission (the Cougar 2000, on which the Storm is based, was the first). This gearbox features a fully adjustable ball differential and a friction-type slipper clutch to limit wheel spin. The Storm also has unique, highly effective slider shafts.



Tyree Phillips: truck ESCs

Which features are most desirable in a racing truck speed controller (ESC)? According to Tyree Phillips of Novak Electronics, low "on" resistance (voltage drop), strong brakes and a regulator with a large enough power output to handle today's FET-boosted steering servos are vital.

• **"On" resistance.** An ESC with a low "on" resistance is more efficient, and that means lower ESC temperatures. The ESCs used in race trucks are usually subjected to higher current loads because trucks are heavier and are probably running seven cells. When mounting an ESC in a race truck, always use heat sinks, and make sure that the controller is mounted in such a way that air can pass through the heat-sink's cooling fins at all times.

• **Brakes.** Bringing trucks to a stop takes strong brakes. Phillips recommends that racing trucks be equipped with speed controllers that have dual brake transistors and external Shottky diodes. Dual brake transistors provide twice as much braking power as a single transistor, and because braking action "fades" as the transistors heat up, having two allows them to dissipate heat more efficiently, so brakes last longer.

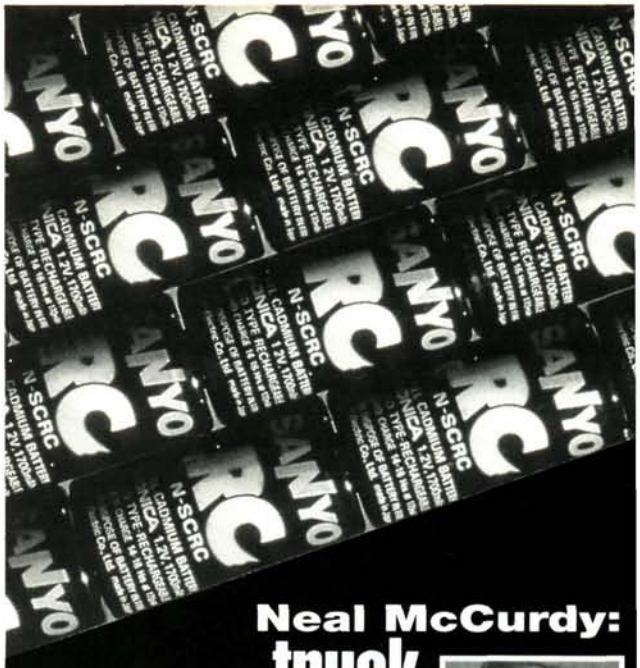
Shottky diodes are needed to handle recirculating current. These diodes produce heat, so having them outside the ESC also helps to prevent your brakes from fading. Usually two diodes are used. Phillips advises that you mount them on the motor itself, and run both parallel. Also, keep the Shottky diodes' leads as long as possible; the longer leads actually keep the diodes at a lower temperature.

When setting up your transmitter, set your brakes at maximum. Then use your low-end point adjustment, ATL, or grip-dial A to adjust the amount of "push brake" you need for maximum.



• **Voltage regulator.** Most truck racers use high-speed, FET-boosted servos like KO Propo's 1001 and 1003 servos and Airtronics' 94151. If you plan to use an FET-boosted servo, your ESC should be equipped with a 6V regulator that can handle a current draw of 1 amp.

• **Current limiter.** Two factors determine your controller's limiter setting: the amount of available traction and the size of the jumps that must be cleared. A good starting point is a limiter setting of 80 to 100 amps. This should give you enough current to clear most jumps, but it might be too much for slick tracks. For slick, low-traction conditions, 40 to 60 amps is a better starting point. When traction is good, most racers turn the limiter all the way up to 140 amps—essentially, turning it off. Remember: each track is different, and conditions tend to change during the day. You'll probably have to adjust the limiter accordingly.



Neal McCurdy: truck battery choices



When it's time to choose a battery for a racing truck, most people think that they need different batteries from the ones they usually use for 2WD buggy racing. Well, according to Trinity's Neil McCurdy, that isn't the case.

• **Modified racing.** For most modified truck racing, 1700 SCRC cells work really well. Use cells with numbers from 340 to 350 at 20 amps, or 270 to 280 at 25 amps. You get more run time and voltage with the 1700 cells than with 1400 SCRs. If you aren't familiar with these numbers, here's a brief explanation: the numbers refer to the time it takes (in seconds) for a pack to discharge at a set rate of 20 amps. The "industry standard" cutoff voltage for this discharge cycle is 0.9 volt. This standard voltage reading allows you to compare one company's numbers with those of another. It will take a 350 or 360 pack longer to discharge than a 310, 290, or 280 pack.

• **Stock racing.** For stock-class racing trucks, 1700s are usually the choice. McCurdy makes the same recommendations for stock racing as for modified: stick with the same discharge numbers, but look for cells with a higher voltage, though they may be hard to find.

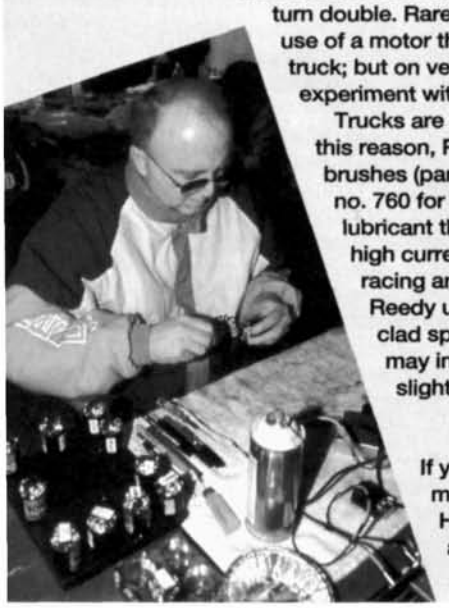
• **Six cells or seven?** McCurdy says that this is a matter of preference. On certain tracks, such as tight indoor tracks, where they aren't worried about run time and they don't need as much punch, some drivers opt to run six cells to make their trucks slightly lighter for better handling. Some drivers don't like to run six cells because they think they don't give enough punch. Obviously, though, if everyone you race against uses seven cells, you might have to join them to keep up!

• **Charging.** As a rule, charge your batteries at 5 amps until they peak, using a good-quality peak-detecting charger. There aren't really any secrets here—5 amps...that's it.

Mike Reedy: truck motors

Because of their weight and large tires, racing trucks require motors that produce more torque and brute power than those needed for buggies. This, and the fact that most of his racing team use seven cells instead of six in their trucks, makes Reedy Modifieds' Mike Reedy believe that different motor winds for trucks are necessary.

"Ninety percent of the time, you'll find our team running a 13-turn double motor in the truck class," says Reedy. He also says that on very short tracks, his drivers will switch to a slightly higher wind—a 14-turn double. Rarely will Reedy recommend the use of a motor that has fewer than 13 turns in a truck; but on very long, open tracks, he will experiment with 12-turn motors.



Trucks are notoriously tough on motors. For this reason, Reedy uses his standard off-road brushes (part no. 737 for the upright brushes, no. 760 for laydown brushes), which have a lubricant that he claims can withstand the high current conditions of off-road truck racing and minimize commutator wear. Reedy uses standard, off-road, copper-clad springs, but for added punch, he may increase the spring's tension slightly.

MAINTENANCE

If you take care of it, your truck's motor should last a very long time. Heat is a motor's worst enemy, and the common causes of overheating include:

- over-gearing (using an incorrect gear ratio, i.e., a pinion gear that's too large);
- bad motor bearings;
- binding in the transmission (creates excessive drag).

When at a major race, Reedy cleans the motor and re-trues its commutator after three runs—more a precautionary measure than a necessity. For club races, these steps are usually performed after two nights' worth of racing. It's important that the brushes used in off-road—especially truck racing—have good lubricating qualities. Many people mistakenly use an on-road brush or a brush designed for stock motors. These will slightly increase power, but they'll also increase commutator wear owing to inadequate lubricating qualities.

IS MY MOTOR WORN?

The easiest way to tell whether a brush should be replaced is simply to remove it from the brush hood and inspect it. If the brush is noticeably worn, or if its sides are discolored (gold or burnt blue) near the tip, replace it. "When replacing brushes, I always re-true the commutator," Reedy adds.

To determine whether a motor commutator is out of round, do this simple "trick of the trade": run the motor off a 5V source; put the tip of a small jewelers' screwdriver (the kind that has a "floating knob" on its handle) on the motor brush. If the comm isn't true, the knob will bounce around as the motor runs. A commutator that's out of round will actually speed up wear because there will be more electrical arcing between it and the comm. Re-truing the comm will solve this problem.

Tim Clark: truck tires

For scale realism, race-truck tires are larger than buggy tires, but their larger diameters—and the corresponding increase in sidewall height—allow them to absorb larger bumps better. That's why race trucks seem to handle rough tracks more easily than buggies do. As for the actual design of truck tires, Tim Clark, Pro-Line's chief tire designer, believes that the tread patterns, rubber compounds and spike designs that work on buggies work equally well on trucks.





WHICH TIRES WORK BEST?

According to Tim, there isn't one "best" tire. The trick is to select the tire that will work best on a particular track.

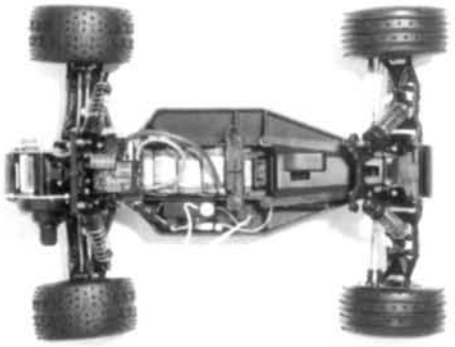
- **Soft, fluffy tracks.** Use a tire that has tall spikes that will sink into the surface to produce traction. When this type of track starts to become packed, Tim has found that "stepped" mini-pin tires work well. The base of their tread doubles the height of the mini-pin and allows deep penetration on the fluff, yet still affords decent traction where the dirt is packed harder.
- **Hard-packed tracks.** Tim feels that mini-pins or "fuzzies" are the way to go. On these tracks, tall spikes are next to useless; they can't penetrate the hard dirt, and they tend to bend and distort the tire's body. Short spikes—those found on mini-pin and fuzzie-type tires—will be less likely to flex, and because they're thinner, many more of them can be molded onto the tire—lots of edges to scrape the surface for traction.

Rubber compound is also a major consideration. As a rule, tires that have large spikes should be molded of a harder, stronger rubber so that the spikes are well-supported. Tires with small spikes—those intended for hard-packed tracks—usually work best when molded of very soft, sticky rubber. Tim adds that foam inserts should always be placed inside soft rubber tires, such as Pro-Line's XTRs.

A ribbed or block/rib front tire works best on most tracks. To gain steering, some drivers cut off one or two ribs (usually the two outer ribs), or they remove the blocks, leaving only the ribs. Both modifications increase the weight that's placed on the remaining ribs, and this makes them "bite" into the track with greater force.

'94 SIDE-BY-SIDE RACE TRUCK GUIDE

Tamiya's Dyna Blaster



Left: the Dyna Blaster has a rigid, molded chassis with an upper stiffener, long A-arms at all four corners, and large-volume, oil-filled shocks.

Below: very stiff suspension arms pivot on small bronze bushings to prevent wear and to ensure smooth action. The bushings—not the arms—are replaced when things get "sloppy."



Below: Tamiya's MDC slipper clutch features an innovative, multi-disk pressure-plate design that provides more slipper-pad surface area for consistent control of wheelspin.



For logistical reasons, Tamiya's new Dyna Blaster truck didn't make it into our comparison, but we thought that you might like to take a peek at the company's first "real" racing truck to see how it would have measured up.

The Dyna Blaster signifies a design departure for Tamiya; it looks more like the Losi, Associated and Traxxas trucks.



Cliff Lett: truck servos



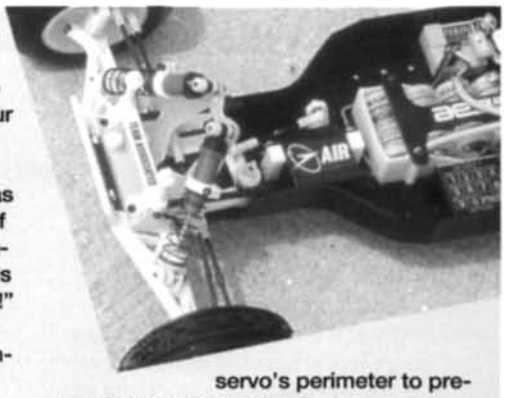
Race trucks have special steering-servo requirements. Trucks weigh a little more than buggies, and their tires are larger and heavier, so it takes a more powerful servo to steer them clear of trouble.

• **Servo torque.** If your servo doesn't have enough torque, your truck will wander on the straights, and its cornering will be vague and inconsistent. "In my race trucks, I use either the Airtronics 94737, which produces 57 oz.-in. of torque, or the Airtronics 94151, which produces 85 oz.-in." says Cliff Lett, former world champion and chief R&D man at Team Associated. As a rule, your truck steering servo should produce 50 oz.-in. of torque, or more.

Lett warns, however, that powerful servos such as the 151 require that the speed controller's (ESC) voltage regulator be heavy-duty, so check the manufacturer's specs to be sure that your ESC can handle the servo's current draw.

• **Servo speed** is also important. According to Lett, on a race truck, a faster servo will almost always be an advantage. "The quicker the servo, the faster you can correct your steering during races." says Cliff. What's quick? Cliff answers, "The 737 has a 60-degree transit time of 0.15 second, which is adequate, but the 151's time is an incredible 0.08 second!"

If your servo isn't quite up to "speed," Cliff recommends that you try this: alter the position of the steering linkage, i.e., the linkage that connects the servo arm to the steering bellcrank. Mount it farther away from the servo output, or move it closer to the bellcrank pivot. This will slightly speed things up, but it will also make the steering feel somewhat "coarse." Also, this adjustment will require more torque from the servo, and you'll have to adjust the steering throw on your transmitter accordingly.



CLIFF'S SERVO TIPS

■ It's important that the steering servo be held in place securely. Servo tape works well, but Cliff suggests that you also run a bead of Shoe Goo (found in most sporting-goods stores) around the servo's perimeter to prevent it from "squirming."

■ The best way to mount a steering servo is to use blocks or other rigid mounts. This also makes removal and maintenance much easier.

■ Always keep the servo output arm at 90 degrees to the link that connects it to the bellcrank.

■ Try to keep the servo link at 90 degrees to the bellcrank arm. This will ensure equal steering throw in both directions.

■ Before making these servo-linkage adjustments, be sure that these adjustments have been made: bellcranks are parallel with each other; front wheel toe and camber are correct; front wheels are pointed straight ahead; brain is turned on. ❑

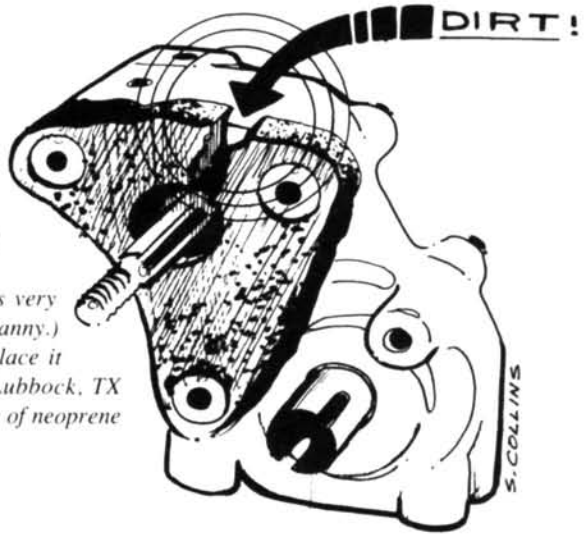
TROUBLESHOOTING

by JOHN HUBER

Illustrations by Steve Collins

If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at Radio Control Car Action, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, Radio Control Car Action, 251 Danbury Road, Wilton, CT 06897. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

Felt Fault



I own an RC10, and every time I clean the tranny, I break the felt dust shield. Is there any way to prevent this, or do I just have to replace it every time? Thanks!

Pat Taylor, Portland, OR

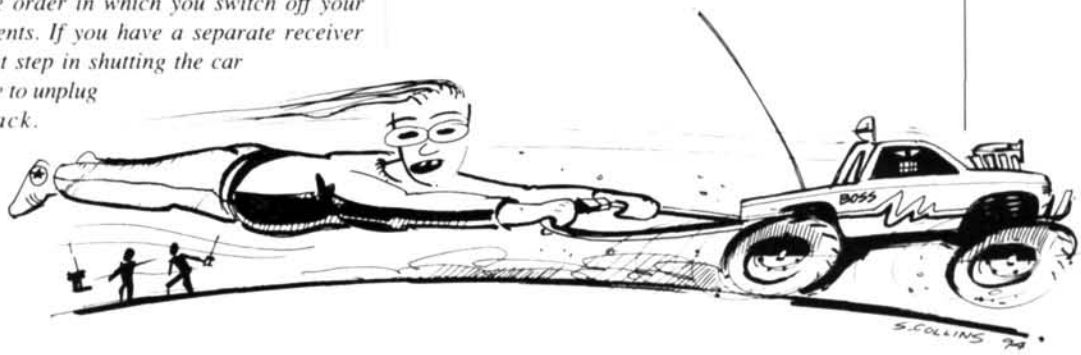
Pat, the felt seal effectively keeps out dirt, but it's very fragile. (I even ripped one before I got it on the tranny.) Either be very careful when you remove it, or replace it with one made by ETA Racing (4930 47th St., Lubbock, TX 79414). Their seal has the same shape, but it's made of neoprene rubber, so it won't pull apart as the felt one does.

Wild Ride

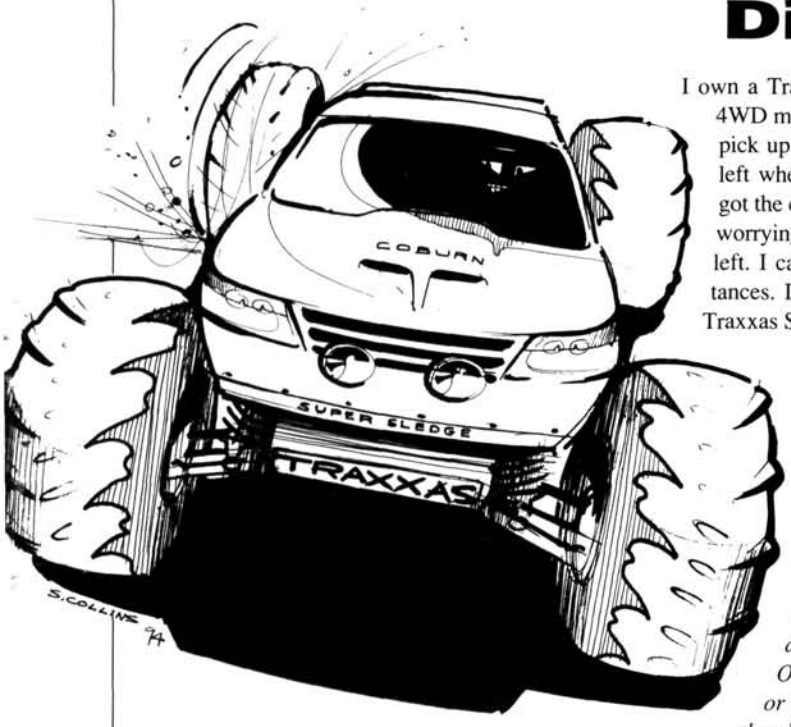
I have a Kyosho Big Boss 2WD truck. Sometimes, when I charge the battery with my 15-minute quick-charger, the truck goes wild when I connect the pack. Will you please help me? Thanks.

Steve Reeder, Dayton, OH

Steve, you're encountering perhaps the most common problem for beginners. The reason your truck goes wild has to do with the mechanical speed controller and the order in which you switch off your radio components. If you have a separate receiver pack, your first step in shutting the car down should be to unplug your 7.2V pack. Your radio system should still be functioning, but no power will go to the motor. Next, turn off the switch in the truck and then the transmitter. Turning your system off in this order will ensure that the mechanical speed controller is in the neutral position and won't cause a problem when you plug in the pack next time. Also, make sure that you turn the components on in the reverse order: transmitter, then receiver and then the 7.2V pack.



Diff Difficulty



I own a Traxxas Sledgehammer with a Powerline off-road 4WD motor and a Futaba ESC and radio system. When I pick up the car and run it, the right wheel spins, but the left wheel doesn't move. I've known about this since I got the car, but I've never thought about it until now. I'm worrying that the right wheel is more powerful than the left. I can never get my car to go straight for long distances. It always curves to the left. Is this normal for a Traxxas Sledgehammer, or is my car offset?

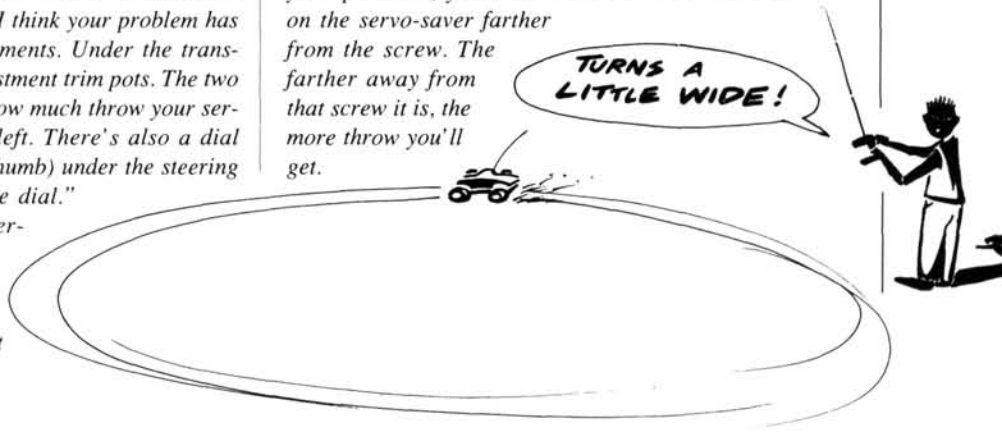
Clay Coburn III, Leawood, KS

Your car needs attention, Clay. It sounds to me as if you have a diff problem, or perhaps a loose setscrew somewhere. Take the tranny apart, and inspect the differential. Hold the diff gear with one hand, and try to rotate one of the shafts with your fingers. If the diff is OK, the other shaft will turn in the opposite direction. If the shafts don't turn in opposite directions, then the diff is causing the problem. Open it up, and see whether the gears are worn or damaged on the inside. If the diff checks out, then look for a loose setscrew on one of the rear drive shafts, and make sure that one of the pins that keys the wheel to the axle isn't missing.

Steering—Not!

I've had my LX-T for about three months, and I finally got it running. I use a Futaba 2PD FM Magnum, a S9301 servo, a Novak M-5 speed controller and Trinity Team Pushed cells. The first time I used my car, I found that it hardly turns. Do I need a better servo? Or, if not a servo, what? Thanks for your help. ***Tim Joseph, Rochester Hill, MI***

Tim, the Futaba S9301 should be able to handle the LX-T without any problem. I think your problem has to do with the radio adjustments. Under the transmitter's clear door are adjustment trim pots. The two marked "ATV" determine how much throw your servos have to the right and left. There's also a dial (that you adjust with your thumb) under the steering wheel called the "dual-rate dial." Dual rate controls the steering-servo throw, too, but you can adjust it while you run. To get the maximum steering throw possible, set the dual-rate dial to 10. Turn the steering wheel to full right, and hold it there with your thumb. Using a little screwdriver, turn the steering ATV dial clockwise until you hear the servo buzz and it stops turning; then turn it back a hair so it stops buzzing. Do the same for the left side, and you should have maximum throw. If you have too much steering while running, use the dual-rate dial. If this doesn't fix your problem, you'll have to move the ball link on the servo-saver farther from the screw. The farther away from that screw it is, the more throw you'll get.





The Benetton is done up in the markings of Michael Schumacher's famous Formula 1 car.

PHOTOS BY MIKE OGLE

CAR ACTION TRACK REPORT

BENETTON B192

TAMIYA

by MIKE OGLE

WHILE attending dozens of parking lot races and observing hundreds of newcomers taking their first look at R/C racing, one simple fact became apparent to me: most people like R/C cars that look like real racecars.

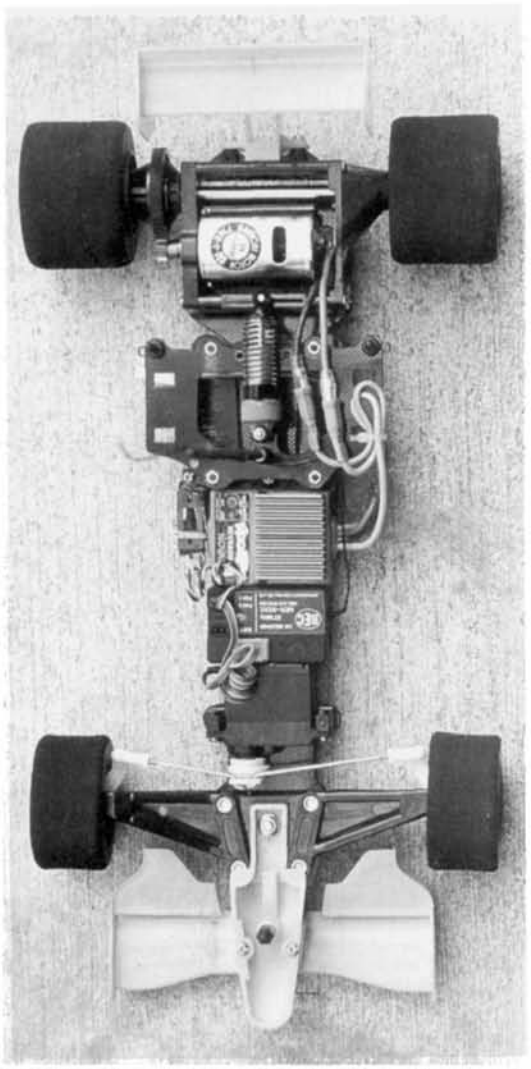


Molded in Camel Yellow, the single-piece rear wing is a big improvement on the multi-piece wings found in previous F1 kits.



Tamiya even provides all the accurate driver details needed to simulate Schumacher or his teammate Martin Brundle!

If we all step back and remember what it was exactly that made R/C so immediately fascinating, most of us would probably say it was the level of realism involved. Running these little cars is so much like real racing, but it's much more affordable and a lot less dangerous. Who could resist?



This top-down view of the Benetton shows that even components of standard sizes will fit nicely into its compact chassis.

But, after a while, most of us come to regard our R/C cars as full-size, 1:1 scale racing machines in their own right, independent of the world of full-size automotives. If a car handles better with an 8-inch, bi-level wing on the back, bolt one on! If it runs faster with the back end completely chopped out, chop it out! Fluorescent pink wheels? No problem! A model driver figure? That ranks somewhere under transmitter-frequency flags on the hardcore racer's scale of geekdom. Of course, all the sponsor logos have been replaced by R/C manufacturers' decals.

If you show up at the track with a car that looks "real," you'll be half expected to gingerly make a few paced laps and then to pull the car off, having run it just enough to win the concours trophy! Somewhere along the way, authenticity was sacrificed at the altar of performance.

A BREAK WITH TRADITION

Although conventional wisdom dictates that an R/C car can be *either* competitive or realistic—not both—take a look at the new Benetton B192 kit from Tamiya*. From its distinctive shark-nose front end, "strut" suspension and perfectly proportioned body to its multi-element rear wing, it looks like a fine scale model. But on the parking lot tracks of the world, the Benetton shows its colors as a truly competitive machine. Maybe you *can* have it all!

Mechanically, the Benetton B192 shows many improvements on Tamiya's earlier Formula 1 kits. The chassis is a light, upper/lower deck, two-piece, black fiberglass assembly that's fairly stiff. The front end's very realistic strut arms are actually rigidly mounted, and like most of today's on-road and oval cars, the Benetton's suspension is handled by conventional small springs over the kingpins.

My micrometer showed the kit's springs to be .016s—a good starting point for dialing in the car. At the rear of the car, a fiberglass T-bar is used to mount the motor pod to the chassis, and an oil-filled shock with a coil-over spring handles the rear suspension damping. I was fairly skeptical about this shock, because it's molded of a blue plastic, but I decided to assemble it to see if it was at least functional. It comes with a two-hole piston, dual O-ring seals, a small bottle of shock oil and a rubber shock bladder, and it's actually remarkably

The Benetton also has a ball differential with locking diff rings that works well right out of the box—very smooth and functional.

TAMIYA BENETTON B192

Type.....Formula 1, open-wheel road racer
Scale.....1/10
List price.....$243

DIMENSIONS

Overall length.....16½ in.
Width.....8 in.
Wheelbase.....103/8 in.
Weight (w/batteries).....38 oz.

BODY

Type.....Benetton B192 F-1
Material.....Polycarbonate

CHASSIS

Type.....Double-deck pan chassis
Material.....Black fiberglass

DRIVE TRAIN

Type.....Pinion/spur
Bearings/bushings.....Bearings on rear axle; plastic or metal bushings everywhere else

SUSPENSION

Front.....Springs over kingpins
Rear.....T-bar/oil-filled coil-over damper

WHEELS (f/r).....Plastic OZ replica 5-spoke
TIRES (f/r).....Pre-trued on-road, foam

ELECTRICS

Motor.....540 SH Mabuchi
Battery.....6-cell SCRs*
Speed controller.....Novak Rooster*
Radio.....JR Alpina AM *
* Not included

OPTIONS TESTED

Tamiya 53030 850 front-wheel bearings; Dan's RC Stuff standard Tamiya spur-gear adapter; Dan's aluminum motor-pod side plate, Novak Rooster ESC; CKW green-dot front tires.

HITS

• Superb details • Realistic racer • Many hop-up components available

MISSES

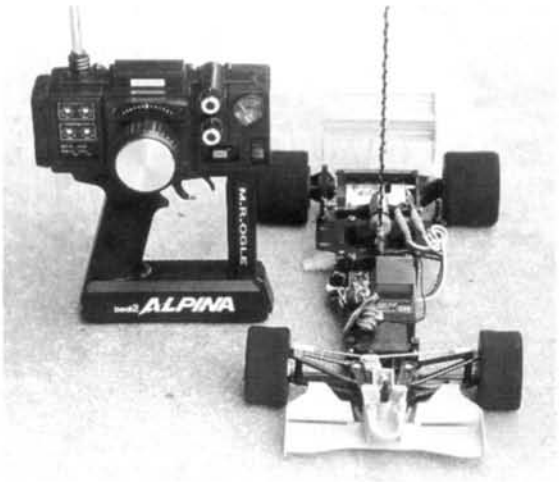
• Most parts are metric—almost nothing is interchangeable with standard U.S. racing components.

good. There's no need to immediately buy an after-market shock; this one really works!

The Benetton also has a ball differential with locking diff rings that works well right out of the box—very smooth and functional. It's a far cry from the old gear-diff F1 Road Wizards of years past!

If, however, you plan to race your B192, I strongly recommend that you convert your car to use standard 64- or 48-pitch gears with a spur-gear adapter from Dan's RC Stuff*. It's the only must-do improvement you should make to the car, and it costs only about three bucks!

I also installed one of Dan's aluminum motor-pod side plates, which is much stronger than the stock one, so you can run Kimbrough* 64-pitch gears and hold the mesh. It also acts as a heat sink to cool the motor. Dan has supported the open-wheel F1 Tamiya car for many years.



JR's Alpina AM radio performs as well as any radio I've ever used—without any radio hits.

MIGHTY LIGHT!

The Benetton comes with a sealed-endbell Mabuchi 540 SH motor, which is pretty good at propelling this lightweight (38 ounces, ready to run) racer. Again, don't immediately replace this motor with a hi-zoot modified, because overkill horsepower will really exaggerate any negative handling characteristics that require chassis tuning. Besides, many parking lot races have spec-class rules that require you to run a kit's stock motor. It keeps everything equal, with the emphasis on driving.

The wheels included are perfect replicas of the OZ wheels used on most full-size F1 cars today. There are even decals for the distinctive yellow bands and OZ logos that go on the rims. If you're pretty adept with the ol' X-Acto knife and have a good, steady hand, you may have better luck than I did when putting these yellow bands into the wheel rims. I found it so frustrating that I finally just painted the bands on with a fine-tip brush.

The kit's pre-trued foam tires are plenty raceable, but the current hot setup on the West Coast parking lot circuit is kit rears with after-market green-dot fronts for a little more steering. I glued a pair of CKW* pre-trued F1 donuts onto the rear wheels. (I just don't trust the supplied double-sided wheel-mounting tape to hold up under hard cornering, much less under repeated applications of penetrating tire sauce.)

CONTROL CHOICE

For radio gear, I tried something new (to me)—a JR Remote Alpina AM radio from Horizon*. This 2-channel, wheel-type radio comes with two standard 507 servos and a 27-band receiver, and if you read the instructions, it's easy to set up.

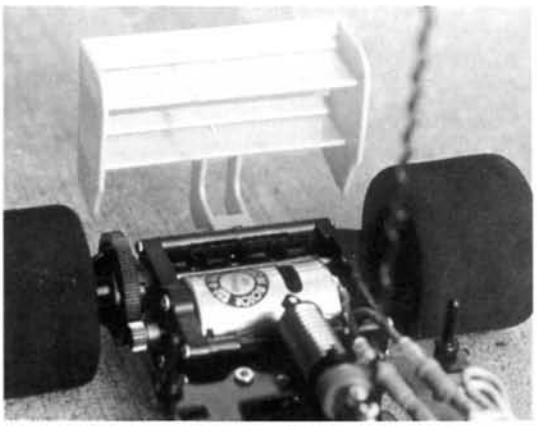
The JR Alpina has all the features you need on a radio: steering and throttle end-point trim adjustments, servo-reversing switches, steering-trim and throttle-trim knobs, a thumb wheel for steering rate and a charging jack (in case you want to equip your transmitter with rechargeable Ni-Cds). The Alpina is well-balanced and very comfortable to use, and it's a great choice for anyone who wants a high-quality radio at a relatively inexpensive price. I also tried the new Novak* Rooster reversible speed controller. This has an innovative one-touch setup feature, and if there's a more user-friendly speed controller, I've yet to see it!

The Rooster's setup sequence goes like this: turn it on, press the button, nail the throttle, push full reverse and *go!* It even had the appropriate bullet-style and Tamiya-style connectors already installed, so I didn't have to fire up the soldering iron.

The Benetton's distinctive shark nose is particularly noteworthy, because it's actually two pieces—an injection-molded bottom half that's bolted to the front wing and a top half that's molded into the body itself. The halves fit together perfectly, and the body gives this model of a famous racecar its unmistakable profile.

Remember the very first R/C Thunderdrome? It was all open-wheel cars, and there was a large group of Road Wizards.

Like most cars in its price range, the Benetton comes with metal and plastic bushings, but its rear axle has two large sealed ball bearings. But don't go raiding your bearing box for replacements; you probably won't have any in the correct metric sizes. The only ones I immediately replaced with bearings were the front wheel bushings, which I replaced with Tamiya's 53030 850 ball-bearing set.



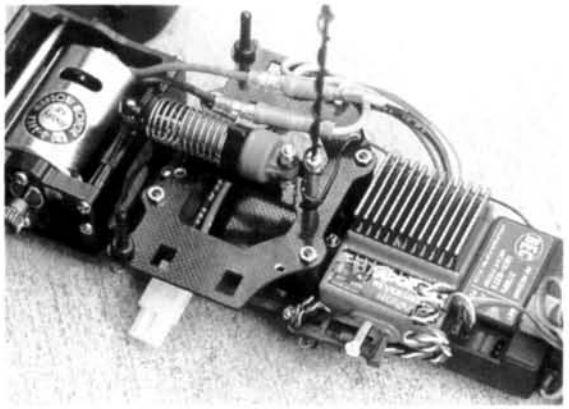
The durable rear wing—a four-level, single-piece unit—is a work of plastic molding artistry.



The Benetton's nose comes in two pieces; here's the bottom section, which is bolted to the front wing.

BODY BEAUTIFUL

All this is topped off with another of Tamiya's beautiful, accurately scaled polycarbonate F1 bodies. The Benetton's distinctive shark nose is particularly noteworthy, because it's actually two pieces—an injection-molded bottom half that's bolted to the front wing and a top half that's molded into the body itself. The halves fit together perfectly, and the body gives this model of a famous racecar its unmistakable profile.



Novak's Rooster—a speed controller with reverse—just dropped right in, and the setup was even easier!

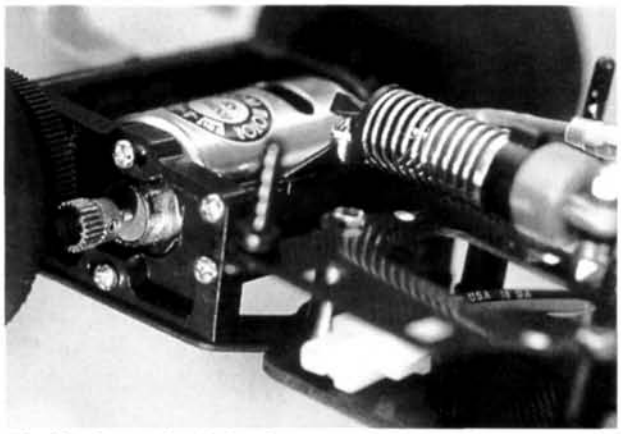
One challenge in making everything look right is matching the body's yellow paint to the "Camel Yellow" molded-plastic body components—quite a challenge. I came fairly close by mixing four parts of Pactra's* Daytona Yellow with one part of their Competition Orange. The Benetton's leaf green is fairly well simulated with three parts of Pactra's Rally Green and one part Blue Streak.

With the exception of the Camel sponsor logos, which I scrounged from a 1987 Tamiya Lotus Honda kit, you'll find all the markings (more than 100) on the two decal sheets. In fact, applying the decals took about twice as long as building up the chassis and installing the running gear. But was it worth it? You bet! Look at the finished product. It looks stunning—like a "zapped-down" version of Michael Schumacher's full-size racecar.

THE BENETTON BOOGIES!

At the Benetton's shakedown race at Victory Speedway in Woodland Hills, CA, the car proved its worth. At first, it had a tendency to understeer, so after a few laps, I brought it in and tightened the adjustment screw that holds the front of the T-bar. That helped a little, but steering was much better after I had tightened the spring on the rear shock by installing an additional spacer and switched to Big Jim Greenemeyer's* Goo Creme tire-traction sauce. It's the best tire dressing for parking lot racing I've ever tried; pretty soon, everyone in the pits—including the top qualifier!—was asking to "borrow" some.

If you follow the full-size F1 circuit, you'll appreciate the time and effort Tamiya put into this kit's details. But, after all, Tamiya is one of the world's leading model-kit companies, and we've come to expect this kind of scale accuracy and quality from them. A pleasant surprise is the continuous refinement of the handling end of the package. It just goes to show that good looks and high performance *can* go together.



The black-anodized aluminum motor side pod and standard spur-gear adapter from Dan's RC Stuff allowed the use of standard 64-pitch Kimbrough gears.

**Here are the addresses of the companies mentioned in this article:*
Tamiya America Inc., *2 Orion, Aliso Viejo, CA 92656; (714) 362-2240.*
Dan's RC Stuff, *9525 Cozycroft Ave., Chatsworth, CA 91311; (818) 700-6912.*
Kimbrough Products, *E. St. Andrews Place, Unit F, Santa Ana, CA 92705; (714) 557-4530.*
CKW Mfg., *1889 W. Commonwealth, Unit I, Fullerton, CA 92633.*
Horizon Hobby Distributors, *4105 Fieldstone Rd., 61821; (217) 355-9511.*
Novak Electronics Inc., *18910 Teller Ave., Irvine, CA 92715; (714) 549-0875.*
Pactra Inc., *620 Buckbee St., Rockford, IL 61104.*
"Big Jim" Greenemeyer Racing, *4455 Torrance Blvd. #449, Torrance, CA 90509-2806; (310) 793-7017; fax (310) 371-5151.* ■

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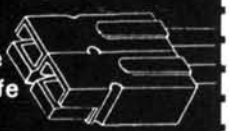
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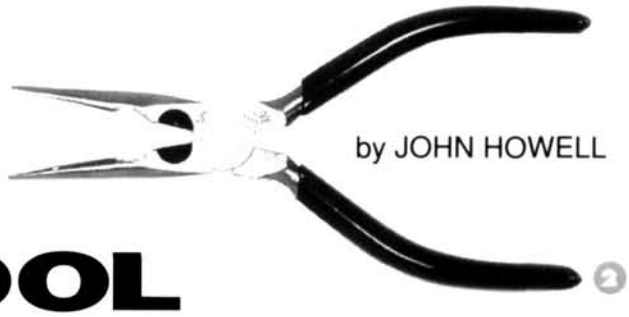
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Beginner's Toolbox

TOOL SCHOOL

by JOHN HOWELL







A PROPERLY STOCKED toolbox is an R/Cer's best friend. Although we use a few of the basic tools that many people use for everyday applications, we use some special ones as well. Without the proper equipment, you can't work on your machinery efficiently. Here are a few "must haves" and "maybe should haves" that will help you get your toolbox up to speed in no time!

1 Assorted screwdrivers. If you work on R/C cars, flat-head and Phillips screwdrivers are "must haves." Look for screwdrivers that have hardened-steel tips. You don't want cheap screwdrivers that might strip out the screw heads. Your best bet is to buy three sizes—small, medium and large—of both types of screwdriver. Tamiya*, Wiha* and the good old Sears Craftsman screwdrivers are of the highest quality. Check 'em out.





2 Pliers. When performing R/C surgery, you had better have your trusty pliers on hand—especially needle-nose pliers. Rubber grips provide a steadier "death grip," which is great when you work on shock shafts and other hard-to-grab items. Your pliers should also have a cutting edge for snipping wires and such. I use a set of Sears Craftsman needle-nose and regular pliers.

3 Metric and standard Allen drivers. Most of the time, you can get away with using the L-shaped Allen wrenches that come with car kits, but Allen drivers have benefits you should check out. Allen drivers are larger (not as easy to lose), they have hardened tips that are very hard to strip (some have replaceable tips), and they allow you to torque bolts down more tightly. Trinity*, Team Associated*, Wiha and Thorp* Allen drivers are highly recommended.

4 Nut drivers. Although some kits come with a four-sided nut driver called a "box wrench," unfortunately, some don't. Nut drivers make it much easier to remove wheels, shocks and other miscellaneous items. Most general hardware stores and hobby shops carry assorted nut drivers. RPM* manufactures two molded nut wrenches for Associated and Losi cars that fit the cars' shock mounts and wheels. RPM offers a molded slipper wrench for Losi and Associated as well.

5 Lexan scissors. You'll probably buy a Lexan body sometime or other, and if it's not already cut, then you'll have to trim it yourself. Straight scissors won't cut it (ha, ha, that was a joke), but specially designed,











curved, Lexan-cutting scissors make trimming wheel wells and other intricate lines much easier. Check with Tamiya, Kyosho*, or HD Products* for a pair.

6 Tweezers. You just never know when these little suckers might come in handy. Fishin' around in your parts box for small items is a pain, and so is trying to pick up a bolt in a jar full of miscellaneous hardware. Tweezers make the job easier. Any type of tweezers will do, but I've had success with Tamiya's long tweezers, which are offered with curved and straight tips.

7 Servo tape. A necessity! Use servo tape to stick your electronics, i.e., your servo, receiver and ESC, to your car's chassis. There's no end to the uses you'll find for this double-sided, adhesive foam tape: attach your switches, and hold down stray wires or anything that won't stay put! Most every company sells servo tape; check to see which brand your local hobby shop recommends. If you really want to hold something in place, use servo tape with...

8 ...Zap-A-Dap-A-Goo*. Although it's not mandatory, this goop does help a lot when you mount servos. Spread a thin bead around the servo to help keep it in place. You can also use it to seal and help mount your receivers and ESCs.

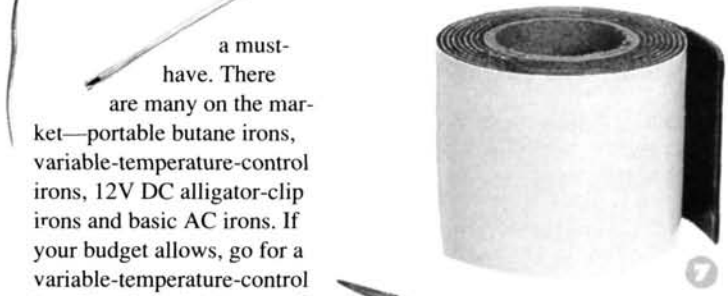
9 Silicone. This flexible goop is great for waterproofing receivers, ESCs and even servos. Spread a thin bead over cases or joints, and let it dry; you can easily peel it off when you want to. It also works well for moderate- to high-temperature applications, such as sealing exhaust pipes and carburetors.

10 Hobby knife and extra blades. Sometimes, things such as Lexan bodies, motor wires and miscellaneous plastic items have to be trimmed with a sharp hobby knife. It's easier to trim them using this Tamiya hobby knife than it is using a razor blade.

11 Body-hole punch. Instead of drilling holes in your body (and possibly scratching it or messing it up entirely), use a hole punch, such as this Trinity tool that makes perfect holes every time. Another option is to use a...

12 ...Reamer. A tapered reamer, such as this one from Horizon*, cuts ⅛- to ½-inch-diameter holes, so it's perfect for body-post holes, antenna holes, mounting wings and even transponders.

13 Soldering iron. Weighing in as one of the more expensive items on the list, a soldering iron is definitely a must-have. There are many on the market—portable butane irons, variable-temperature-control irons, 12V DC alligator-clip irons and basic AC irons. If your budget allows, go for a variable-temperature-control iron like Ungar's* Super Race Station. It's a very versatile iron; you can use it at a high temperature for soldering battery packs or at a lower temp for soldering delicate electronic work.







14 Toothbrush and paintbrush. Use an old toothbrush to remove dirt from tires and hard-to-reach areas, and use a semi-fine-bristle paintbrush to sweep away loose dirt from larger areas.

15 Solder. Try to stick to 60/40 (60-percent lead, 40-percent tin) rosin-core solder. The rosin helps the solder to "flow" to make a better joint. Don't use acid-core solder; it can damage sensitive electronic equipment. Check with Radio Shack, an electronics store, or a hobby shop for good-quality solder.







B&T R/C PRODUCTS

SANYO 1400 SCR CELLS

Indiv Cells	$ 2.55 ea
6 Cell 275+	21.00 ea
6 Cell 285+	28.00 ea
6 Cell 294+	38.00 ea
6 Cell 300+	52.00 ea
4 & 7 Cell also available	Call

SANYO 1700 SCRC CELLS

Indiv Cells	$ 3.75 ea
6 Cell 340+	28.00 ea
6 Cell 350+	38.00 ea
6 Cell 360+	48.00 ea
6 Cell 370+	65.00 ea
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BEGINNER'S TOOLBOX



16 Rotary tools. A rotary tool makes life in the R/C world much easier. Use it to cut excess plastic, drill holes, sand rough edges, polish material and a million other things. Minicraft*, Wahl*, Sears and the most popular manufacturer—Dremel*—offer rotary tools.



17 Glow-plug wrench. If you own a gas-powered car, a glow-plug wrench makes removal and installation of glow plugs quick and easy. Dynamite's chrome-plated plug wrench has a 6-inch-long shank that can easily reach into tall heat-sink heads. The top of the tool features a fuelproof, composite-plastic T-handle.

18 Roll-pin installer. If you have to work with roll pins, don't even think twice about picking one of these tools up. Instead of having to hammer, use pliers, etc., this tool lets you easily install 3/32-, 5/64- and 1/16-inch roll pins. Thorp's roll-pin installer has saved me from throwing many a universal out the window in frustration.

19 Digital voltmeter. A digital voltmeter (DVM) allows you to check DC current. It's invaluable for using and maintaining your R/C electrics. Use it to monitor voltage as you charge your pack, or use it to check your ESC's efficiency. A DVM also comes in handy when you want to detect bad and reversed cells.

20 Hemostat. A hemostat (found at medical-supply stores and Radio Shack) is a medical tool that resembles tweezers but also doubles as a clamp. It's good to use while soldering (to hold wires that tend to get hot) and for clamping down on nuts in hard-to-reach places where a normal set of pliers won't fit.



Here are the addresses of the companies mentioned in this article:

***Tamiya America Inc.,** 2 Orion, Aliso Viejo, CA 92656; (714) 362-2240.*
***Wiha,** 1400 E. Broadway, Monticello, MN 55362; (612) 295-2162.*
***Trinity Products Inc.,** 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.*
***Team Associated/Associated Electrics Inc.,** 3585 Cadillac Ave., Costa Mesa, CA 92626; (714) 850-9337.*
***Thorp Mfg.,** 4054 E. Mission Blvd., Pomona, CA 91766; (714) 622-6518.*
***RPM,** 14978 Sierra Bonita Ln., Chino, CA 91710; (909) 393-0366.*
***Kyosho/Great Planes Model Distributors,** P.O. Box 9021, Champaign, IL 61826; (217) 398-6300.*
***HD Products;** distributed by Horizon Hobby Distributors, 4105 Fieldstone Rd., Champaign, IL 61821; (217) 355-0022.*
***Zap-A-Dap-A-Goo;** distributed by Pacer Technology, 9420 Santa Anita Ave., Rancho Cucamonga, CA 91730.*
***Horizon Hobby Distributors** (see above).*
***Ungar,** 5620 Knott Ave., Buena Park, CA 90621.*
***Minicraft,** 1 Perfection Place, Ridgely, MD 21685; (800) 288-5311.*
***Wahl Clipper Corp,** P.O. Box 578, Sterling, IL 62901; (800) 334-4627.*
***Dremel,** 4915 21st St., Racine, WI 53406.* ■

Is Bigger Better?



1/6-Scale TRAXXAS Buggy

by JOHN HUBER

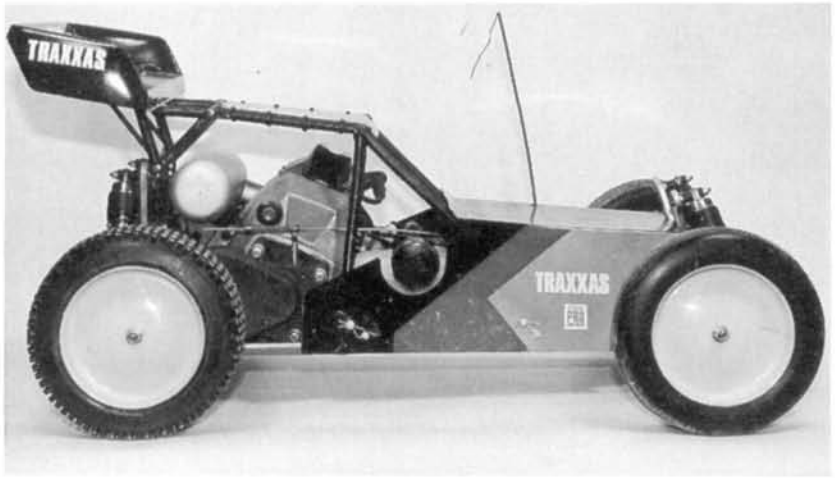
Over the years, I've tested just about every kind of R/C vehicle—from a tiny 1/52-scale car to a 1/14 scale tractor-trailer. Traxxas'* new 1/6-scale buggy was my first test of a huge, off-road, gasoline-powered beast. Is bigger better? Well, after you've fired one up, I'm sure you'll be yellin', "Yeee-ha!"

FEATURES

The prototype buggy I reviewed came assembled, and I was asked by Traxxas not to disassemble it, so I wasn't able to get the same info that I would have if I had built it. I can, however, tell you about some of its features.

PHOTOS BY JOHN HUBER

TRAXXAS 1/6-SCALE BUGGY



SCALE 1/6
List price $1460

DIMENSIONS
Overall length ..... 26.5 in.
Wheelbase ..... 19 in.
Front width ..... 17.75 in.
Rear width ..... 17.75 in.

WEIGHT
Gross (ready to run) ..... 22 lb., 15 oz.

CHASSIS
Type ..... Plate
Material ..... Aluminum

DRIVE TRAIN
Type ..... Gear
Primary ..... Pinion/spur
Transmission ..... Gear
Differential ..... Gear
Slipper clutch ..... Friction-type
Bearings/bushings ..... Ball bearings

SUSPENSION
F/R: Type ..... A-arm w/adjustable upper link
Damping ..... Oil-filled, coil-over shocks

WHEELS
Front: Type ..... One-piece plastic
Dimensions (DxW) ..... 4.5x2 in.
Rear: Type ..... One-piece plastic
Dimensions (DxW) ..... 4.5x2.6 in.

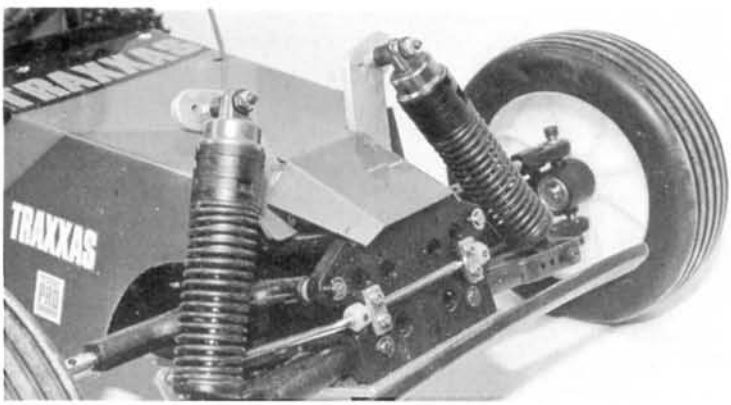
TIRES
Front ..... Semi-pneumatic ribbed
Rear ..... Semi-pneumatic stubbies

POWERPLANT
Engine ..... Mitsubishi TL26
Pipe ..... Traxxas muffler
Carburetor ..... Stock

OPTIONS TESTED
Traxxas radio system, Futaba S9302 throttle servo, two S3302 steering servos

HITS
• Big and powerful • Runs on plain old gasoline and oil • Runs for an hour on one tankful

MISSES
• Rear wing could be a little stronger • A little expensive • Won't fit in your bookbag



Shockzilla! A set of massive shocks secured to burly front A-arms provides the damping up front. A sway bar helps limit body roll and increases stability and high-speed steering.

The chassis is made of very thick aluminum, and it should be capable of surviving serious off-road abuse. Up front, there's a beefy bulkhead with an equally strong aluminum shock tower. To further strengthen the front end, two adjustable rods connect the bulkhead to the chassis. The front and rear arms are made of nylon and are very strong. Large-diameter adjustable upper links are used in the front and the rear so you can adjust camber to suit your track conditions.

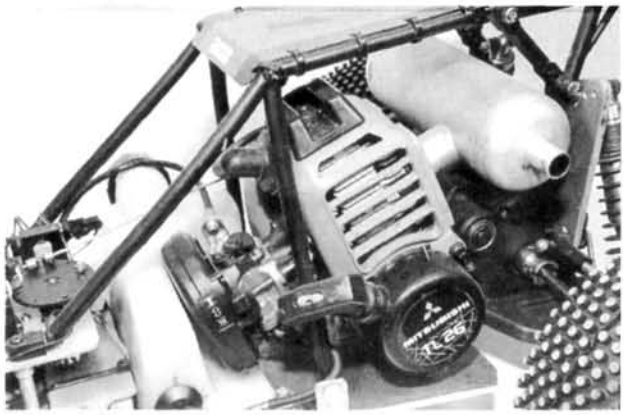


On the 1/6-scale Traxxas buggy, two massive Futaba S3302 1/4-scale servos handle the steering, and a S9302 servo takes care of the throttle chores.

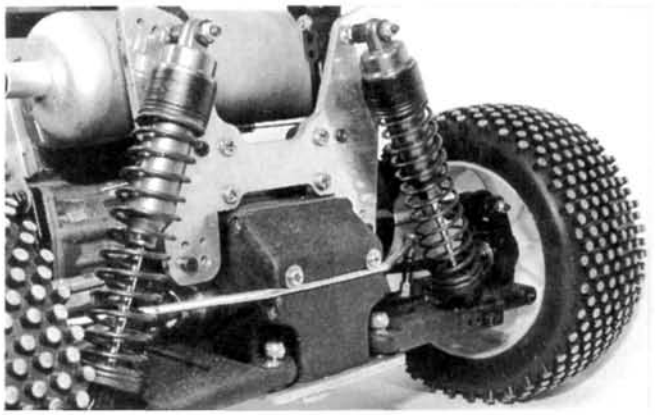
The radio gear is mounted directly behind the front bulkhead. Twin 1/4-scale servos are used for steering, and each has an independent bellcrank/servo-saver. The throttle servo, which, in this case, is a Futaba* 9302, is attached to the radio plate. Below the radio plate is the receiver pack. Because of the long run times that are possible with this vehicle, a 5-cell 1700mAh pack was used.

The tank and the engine are behind the radio gear. Although I don't know exactly how large the tank is, I do know that the buggy runs for at least an hour on one tankful of gas. The engine is a Mitsubishi TL26 with a pull-starter. Its muffler keeps engine noise to a minimum. The entire engine assembly is attached to the gearbox and bolted securely to the chassis. The slipper clutch and the brake mechanism are inside the gearbox. A sturdy nylon roll bar that also serves as the rear wing mount covers the entire engine.

I'm not sure what's inside the shocks, but they seem to be of very high quality. They look like a bigger version of the shocks found on Traxxas' 1/10-scale cars



A Mitsubishi TL26 2-stroke, gas-powered engine has plenty of horsepower and propels the 22-pound buggy to top speeds of nearly 30mph!



Out back, similar monstrous shocks provide the damping, and a sway bar helps to prevent unwanted body roll.

and trucks: they're hard-anodized and huge! Shock spring shims of various thicknesses are included to adjust the ride height; this is a nice touch.



The only thing bigger than the Traxxas 1/6-scale buggy is Chianelli's ego!

TESTING

Unfortunately, when it was time to test the buggy, the Northeast was covered in snow and ice. I took the buggy out to a cleared street to see what it was made of. After a couple of pulls on the ripcord, the engine started up. I had to adjust the choke slightly to get it to run well, but that was it. The buggy is fast for its size, and it's actually quieter than some of the 1/10- and 1/8-scale nitro cars I've tried.

After a few passes down the road, I was itching to see what it could do over some jumps. I threw it into the back of my truck and headed out to find a more favorable testing ground. The best place I could find was a small, frozen pond. I started the buggy up. Traction was a bit of a problem on the ice, but with careful throttle control, I was able to get it up to speed without spinning out.

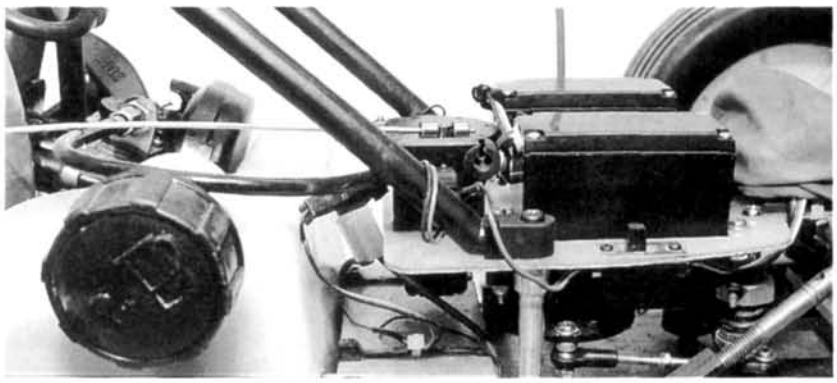
The ice-covered snow made for some great jumps—especially along the edges of the pond. I drove the buggy across the pond at full speed and jumped it right out onto the snowy banks. I'd guess that it jumped at least 20 feet, and it landed in the snow, just barely breaking through the top layer of ice. I must have jumped the banks 30 times, and every time, the buggy recovered well and landed on all fours.

For the grand finale, I set out for a small island in the middle of the pond. It, too, was completely covered with ice and snow, but it made a perfect jump. When I hit the island at full speed, the buggy shot up about four feet into the air. It sailed over the entire island and settled down on the opposite side. Wow, can this thing jump!

Stopping on the ice was tricky, although the braking system worked well. I got the best results by spinning the buggy and applying the throttle again. On dry pavement, the brakes stopped the car with authority.

If you want some big-time fun, check out the Traxxas 1/6-scale 2WD buggy. It isn't inexpensive, but it sure was designed well. On a dirt track, I'm sure it would be outstanding!

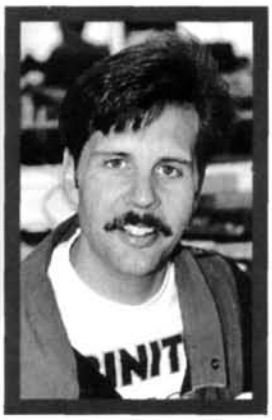
**Here are the addresses of the companies mentioned in this article:*
Traxxas Corp., *12150 Shiloh Rd., #120, Dallas, TX 75228; (214) 613-3300.*
Futaba Corp. of America, *4 Studebaker, Irvine, CA 92718; (714) 455-9888.* ■



The radio plate rests directly underneath the receiver pack. Owing to the vehicle's potentially long run time and the current draw from the larger servos, a 5-cell 1700mAh pack is used.

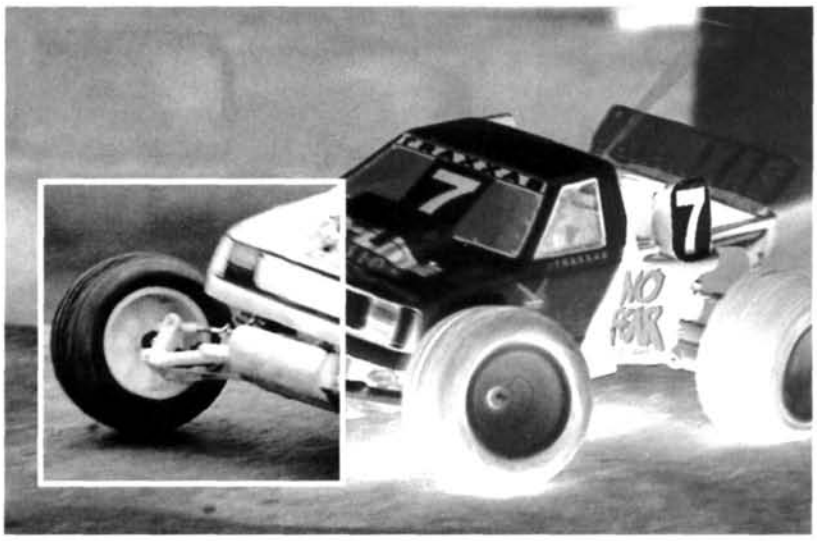
CAR ACTION HOW TO

Pro Tricks for Faster Laps



Truck Suspension Tips

by JACK JOHNSON



ALL RACING-TYPE stadium trucks can be adjusted to improve handling and overall performance. In most circumstances, the standard setup that the instructions tell you to start with will work fine. After all, the factory teams and the test crews did spend several months developing the product. There will always be that little something extra that you can do, however, or that subtle change that you can make to improve a truck's performance.

It's virtually impossible to tell you to make a specific change and expect it to work on every single truck for all track conditions. But I can provide you with enough basic knowledge so that you'll have a pretty good idea of what to try and when to try it.

ON THE "WRITE" TRACK!

When you experiment with different adjustments, write everything down as you go along, including how the truck felt when you drove it. There's no better way to remember everything that you try, so the better your notes, the quicker you'll be able to dial in your truck on race day. If you're ever at a big race with the factory drivers, ask them if they take notes. I bet that they all say "Yes"!

Get into the habit of writing down your settings. Make up log sheets like this one, and refer to them at the track.

R/C Car Racing Log

Date _____
Chassis _____
Location _____
Race/practice _____
Surface condition _____

Motor: Brand _____ Wind _____
Brush type _____ Can _____
Gearing: Spur _____ Pinion _____
Battery: Brand _____ Type _____
Pack no. _____ Run time left _____
Radio: Receiver _____ Channel _____
Speed controller _____ Servo _____
Tires: Front _____ Rear _____

FRONT SUSPENSION:
Springs _____ Oil _____
Piston type _____ Net caster _____
Degrees toe _____ Degrees camber _____
Ride height _____
Shock position _____ Shock tower _____
A-arm _____
Control link position _____ Shock tower _____
Yoke _____

REAR SUSPENSION:
Springs _____ Oil _____
Piston type _____ Net caster _____
Degrees anti-squat _____
Ride height _____
Shock position _____ Shock tower _____
A-arm _____
Control link position _____ Hub carrier _____
Bulkhead _____

Comments _____

Not every change will make your truck handle better, but record your findings anyway. Review your notes, then try combining two or three adjustments. Many adjustments that don't work alone can improve handling when they're combined with others.

WHAT SHOULD I TRY FIRST?

When you arrive at the track, drive your truck for at least a couple of charges before you make any changes to its settings. This is very important! Get a feel for the truck and the track *before* you make any changes.

When you do make changes to your truck's suspension, keep in mind that a handling compromise may be in order. To make something better, you might have to give something up. The best way to dial in your truck is to make sure that its basic handling is in good shape. Then you can focus on how it jumps.

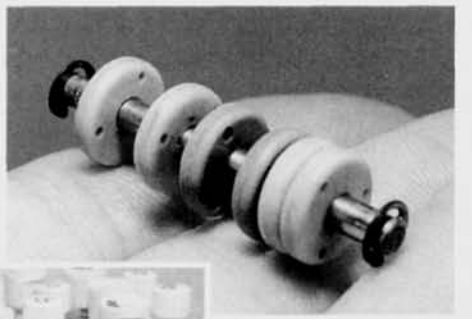
THINGS THAT AFFECT STEERING

To get around the track quickly, your truck should have adequate amounts of both low- and high-speed steering—low-speed for taking tight, hairpin corners and S-turns; high-speed for sweepers or for a fast turn after a straightaway. Too much or not enough of either can cause slower lap times.

Adjusting your truck's shocks is one way to control the steering. How the rear shocks are set directly affects rear-wheel traction, so messing with them to gain steering could cause a loss of traction. For this reason, most racers play with their front shocks when they adjust steering. Shocks are adjusted by altering the damping or the springs. These will probably be the most frequently changed settings on your truck.

• Damping.

The shock's damping, i.e., its ability to control the speed at which the suspension travels, affects many handling traits, especially steering. Lighter damping usually means that the suspension will travel faster, allowing the suspension to absorb small bumps better. Weight transfer becomes quicker also. In general, light damping increases low-speed steering. If front damping is too light, however, the truck may enter turns *too* aggressively, especially on high-bite tracks. Also, light damping diminishes the amount of steering the truck has during mid-turn and when exiting turns.



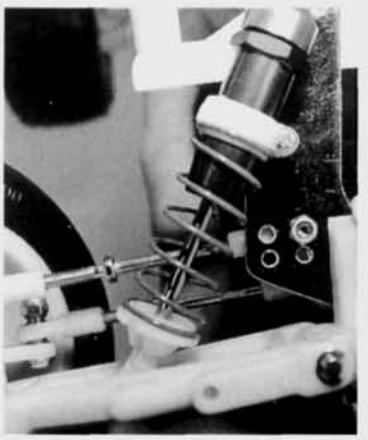


To control damping, change the shock's oil (left) and/or its piston (top).

Heavy damping slows the suspension's action and increases high-speed steering. The truck will tend to be more stable at high speeds and on smooth, fast tracks. The tradeoff is that a little low-speed steering is lost. The truck can become "twitchy" (too sensitive to steering input), and its front end may bounce over small bumps.

• Springs.

Shock springs affect handling much the same as damping, i.e., a lighter front spring provides more low-speed steering and less high speed, while a stiffer spring provides more high speed but less low-speed steering. Spring pre-load—the amount of tension that's placed on the spring when the truck is at proper ride height—also affects handling. Adjusting pre-load *doesn't* change the spring's stiffness; it only alters the truck's ride-height!



Adjusting the spring's tension doesn't change its stiffness, just the truck's ride height. If you need a stiffer spring, use one.

Generally, a higher ride height gives more high-speed steering, and a lower ride height gives more low-speed steering. Be careful here, because if the ride height is too low, the truck will become "wandery" at high speeds, especially on the straights. If the truck's ride height is too high, it can become very sensitive or twitchy at high speed and have very little steering at low speed.

PHOTOS BY JOHN HUBER

GLOSSARY OF TERMS

Ackerman: the steering angle of the inside and outside tires when a vehicle is cornering.

Anti-squat: the angle of the inner rear hinge pin in relation to the chassis. Anti-squat helps to prevent the rear suspension from squatting under acceleration.

CG (center of gravity): the point on the chassis on which the car balances with all components installed.

Camber: the angle of the wheels (see positive camber and negative camber).

Camber link: the rod assembly used to connect the rear hub to the rear bulkhead, or the front spindle carrier to the front shock tower.

Caster: the angle of the spindle carrier in relationship to the front suspension arm.

Drag link: the rod assembly used to connect the servo-saver to the steering idler arm.

Hook: to oversteer out of a corner.

Negative camber: a camber angle in which the tops of the tires are closer to the center of the car than the bottoms of the tires. (Negative camber is commonly used to add stability in bumps.)

Oversteer: the front tires have more traction than the rear tires. This makes the car slide sideways in corners.

Positive camber: a camber angle in which the bottoms of the tires are closer to the center of the car than the tops of the tires. (Positive camber is not commonly used.)

Push: inadequate steering (same as understeer).

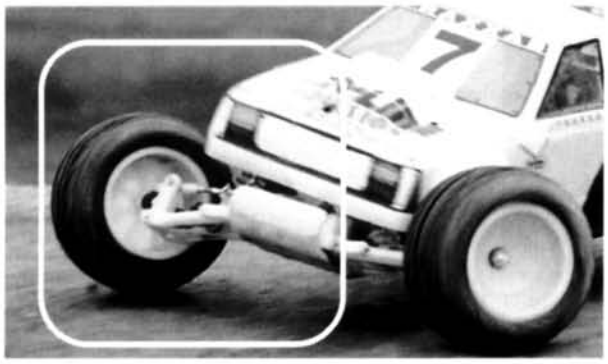
Ride height: the point at which the car settles after being dropped from a height of about 4 to 5 inches.

Tie rod: the rod assembly used to connect the servo-saver and the steering idler arm to the spindle arms.

Toe-in: when the front edge of both rear tires or both front tires are closer together than the rear edge of both tires.

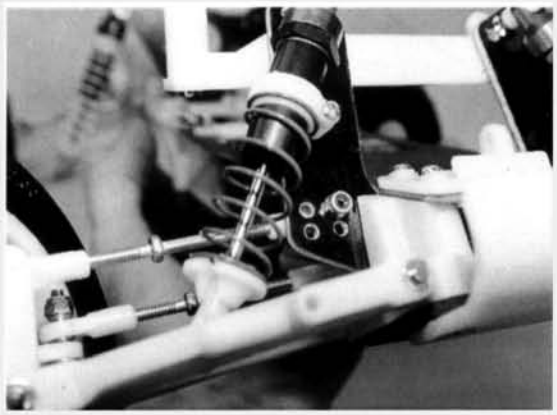
Toe-out: the front edges of both rear tires or both front tires are farther apart than the rear edges of both tires.

Understeer: the rear tires have more traction than the front tires. This leads to inadequate steering.



• Front camber-rod location.

The location of the camber rod mainly affects the way in which the tires contact the track as the truck's chassis leans and as its suspension operates. This is a complex subject! My advice is to experiment to see what does what. Try a few locations, and get a feel for how the camber link affects handling. Typically, a longer rod on the front will give you less steering as the truck enters the turn, but more steering during the middle and when exiting the turn. A camber rod that's shorter usually yields the opposite effect.



Most trucks have several locations in which you can attach the front, upper camber rod. Experiment to see how changing the position will affect steering.

• Front camber and toe-in.

Front camber and toe-in can also be used to adjust steering, but their effects will be minimal. For this reason, they're usually adjusted to a standard setting and left alone. Both the camber and the toe-in should be set at ride height. Set the front tires at about 1 degree of toe-in and 2 to 3 degrees of negative camber at ride height.



The position in which the shock is mounted affects handling. Shocks that are mounted in an upright position, like this one, provide a steering response that's quicker but not as smooth.

•Front shock-mounting location.

The shock-mounting position more or less determines the truck's steering sensitivity. If the shock is attached in a more upright position, steering response is quicker though not as smooth, and low-speed steering increases. If the shock's angle is increased, steering response will be slightly slower, but it will be smoother. Don't go overboard. Mounting the shocks at an extreme angle can result in a drastic loss of overall steering balance.

THE BACK OF MY TRUCK BOUNCES

Rear shock damping can also be used to help dial in a truck. If rear damping is too heavy, the truck will bounce badly on rough sections of the track. Heavy rear damping can also reduce rear traction at low to medium speeds. Lightening either the rear damping or the front damping will make it easier to negotiate small bumps.

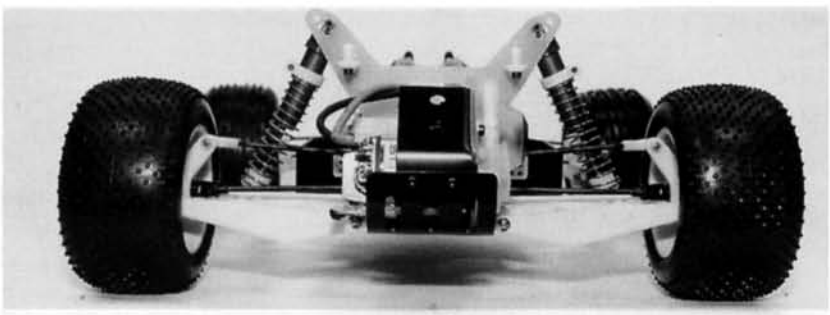
If, however, the rear damping is too light, the truck will bottom out on the larger jumps. Too much weight will be transferred across the rear end, and this could cause the truck to hook exiting corners and make it feel "wandery" when running in a straight line. Rear damping that's too light can also make the truck feel loose when it enters high-speed corners.

The best approach is to try different types of oil until you find a weight that makes your truck handle well on all parts of the track. Then you'll be able to concentrate on driving faster.

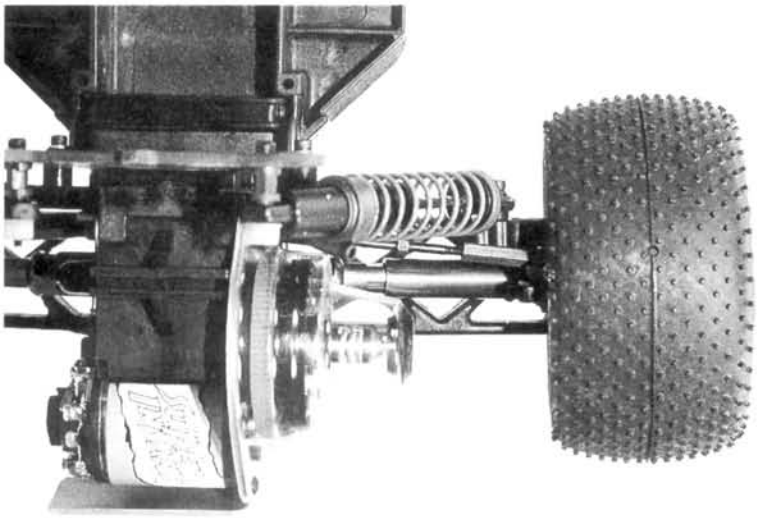
Rear springs act much like the rear damping does. On the bumpy parts of the track, a stiff spring produces the same effect as that of heavy oil, whereas a soft spring produces the same effect as that of light oil.

The opposite may be true when the truck is cornering. For instance, if you change from a stiff spring to a light one without changing to a lighter oil too, the action of the shock will be slower. The truck *will* transfer its weight more quickly because of the softer spring, but it will be slower to recover and less responsive. For this reason, it's common to change the oil at the same time as the spring. This helps to maintain the balance between the oil and the spring.

Concerning ride height, most trucks are set so that the drive shafts are almost level or just *slightly* higher or lower. Be sure to check your truck's instruction manual for ride-height suggestions.



For rear ride height, most trucks are set so that their drive shafts are level with the ground.



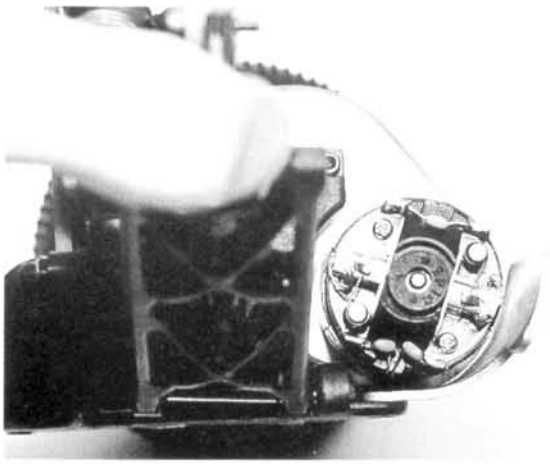
I NEED MORE REAR TRACTION

On some trucks, you can change the rear hubs and/or the rear pivot supports to achieve different degrees of toe-in and anti-squat.

• Rear toe-in.

If the truck has more rear toe-in, it will usually go straighter under acceleration and feel more "locked-in" when exiting turns. On extremely rough sections of the track, increased toe-in can cause the truck to bounce more.

Rear toe-in/out describes the angle of the rear tire in relation to the chassis. More toe-in can improve stability during acceleration.



Anti-squat is the angle of the rear arm's inner pivot pin in relation to the chassis.

• Anti-squat.

This is the angle at which the rear arm is mounted to the chassis as you look at it from the side. The more anti-squat, the more the rear suspension pushes up on the chassis during acceleration. Typically, more anti-squat hooks the truck up more during acceleration, but it causes a loss of steering at moderate speeds. Increasing anti-squat improves the ability of the rear suspension to absorb bumps when you let off the throttle. When throttle is applied, anti-squat usually makes the truck bounce a little more.

• Rear camber.

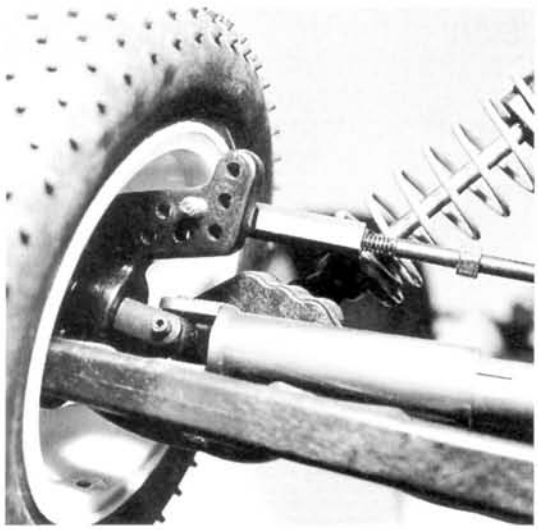
This can affect the amount of rear traction that your truck has. Ideally, you want to have as much of the tire's surface on the ground as possible. If the truck feels as if it's losing traction in the middle of the corners, try a little more negative camber. Traction loss could be caused by the rear tire getting up on its edge and losing surface contact.

• Rear shock angle.

You must also consider the angle of your rear shocks. If you mount the rear shock so that it's more upright, you'll probably notice increased traction from a standing start. The downside is that the steering will also become more sensitive, and this could make the truck feel loose in some corners. Increasing the shock's angle can cause a loss of traction during straight-line acceleration, but it can also make the truck feel much smoother in a corner. Like most other adjustments, the angle you choose is usually a compromise.

• Rear camber mount location.

This mostly affects rear traction. Some trucks allow you to change both the inside and the outside location. As a rule, the camber rod should *always* be lower on the inside than on the outside. If the inside of the camber link is higher than its outside, camber change throughout the suspension travel will not be correct, and handling will be inconsistent. In general, a longer rear camber rod provides more forward traction, and a shorter one, while it usually provides less forward traction, may give the truck's tires more side bite, and this makes slides more controllable.



Many trucks have different locations in which to attach the upper camber rod.

I hope that this information will help you understand how to improve your truck's handling. Remember to write down all the changes you make. If all else fails, and your truck just doesn't feel right anymore, refer to the instruction manual, and set up the truck according to the stock settings. ■

How To: Convert Buggies To TRUCKS



A case of split personality

BY GEORGE GONZALEZ

Are off-road racing trucks faster than off-road racing buggies? As a writer for *R/C Car Action*, I've attended many local and national racing events, and, in many cases, racing trucks end up with the fastest times. In a drag-racing situation, however, the buggy will almost always prevail over the truck because the buggy carries less weight and has smaller-diameter tires.

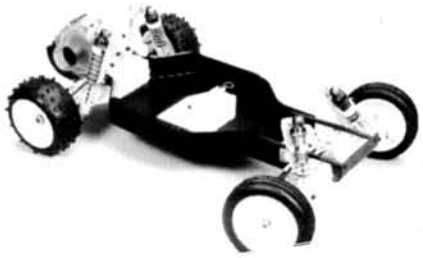
So why are trucks often faster on the track? The answer is simple. Racing trucks have a longer wheelbase and a wider front/rear track, and they carry more weight than racing buggies do; this combination helps keep the truck planted on the track surface when it's cornering and makes the truck more stable on the straights. Also, with their larger diameters, racing truck tires provide extra damping and increased traction; the extra damping is a major benefit on bumpy tracks, while the increased traction helps dramatically in low-bite situations.

IF YOU CAN'T BEAT 'EM, JOIN 'EM

The purpose of this article isn't to discourage any loyal buggy owners, or to convince potential R/C buyers to buy a racing truck instead of a racing buggy; both offer the fun and excitement that R/C racing provides.

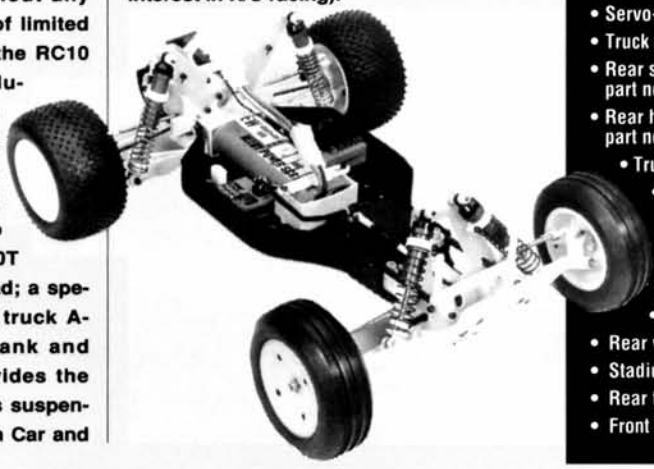
Wouldn't it be great to be able to convert your racing buggy into a racing truck and then be able to race in both classes—buggy and truck—with one racing chassis? Well, the truth of the matter is, you can! That's right; you can convert your Associated* RC10 Team Car, or Losi* JRX-Pro SE into their racing-truck cousins for less than it costs to buy a complete racing-truck kit. I haven't forgotten about you Traxxas* TRX-1, Schumacher* Cougar 2, or Kyosho* Triumph owners either; these racing buggies can be converted into rugged monster trucks as well. If this sounds good to you, read on, and I'll show you how to give your racing buggy a split personality.

Team Associated RC10



Any production model of the Associated RC10 (aluminum tub chassis) can be converted into an RC10T Team Truck without any modifications; because of limited space, however, I'll focus on the RC10 Team Car. The Team Car's aluminum tub chassis is the same as the one used on the 10T, but the 10T uses an extra-long aluminum nose plate, which lengthens the wheelbase to racing-truck standards. The 10T also uses a wider front bulkhead; a special truck shock tower; long, truck A-arms; and a steering bellcrank and servo-saver system that provides the perfect geometry for the truck's suspension. The rear ends of the Team Car and 10T are very similar; in fact, except for the long, truck A-arms, the special truck shock tower and the extra-long dogbones, the rear ends are identical. The 10T also uses different rear hub carriers that improve the camber-rod location.

Converting the Team Car into an RC10T is a very quick and easy process because all the 10T's parts mate perfectly with those of the Team Car. The conversion will take about an hour (painting and trimming the body excluded, unless you're an assembly-line robot with an interest in R/C racing).



RC10 TO RC10T PARTS LIST

- Front nose plate—part no. 7305 (black)
- Nose-brace tubes—part no. 7315
- Front body-mount brace—part no. 7318
- Front body mounts—part no. 7319
- Front bumper—part no. 7324
- Truck front A-arms—part no. 7206
- Hinge pins (inner)—part no. 7209
- Front bulkhead—part no. 7207
- Front bulkhead aluminum support—part no. 7208
- Truck front shock tower—part no. 7214
- Front end screw set—part no. 7241
- (2) Turnbuckle, upper control rod, tie rod—part no. 7253
- Front shock lower mounting screws—part no. 7420
- Servo-saver (complete kit)—part no. 7420
- Truck rear A-arms—part no. 7355
- Rear suspension mounts (0 degrees toe-in)—part no. 7364
- Rear hub carriers (3 degrees toe-in)—part no. 7365
- Truck rear shock tower—part no. 7353
- Rear hinge pins (inner)—part no. 7356
- Rear hinge pins (outer)—part no. 7357
- Truck universals—part no. 7362 (You can also use the standard dogbones— part no. 7361.)
- Front wheels (one piece) —part no. 7842
- Rear wheels (one piece)—part no. 7802
- Stadium truck body—part no. 6122
- Rear tires—part no. 7820
- Front tires—part no. 7870

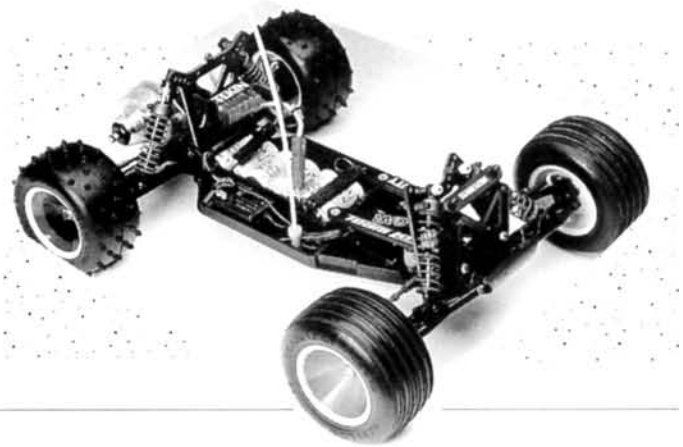
Team Losi JRX-PRO SE



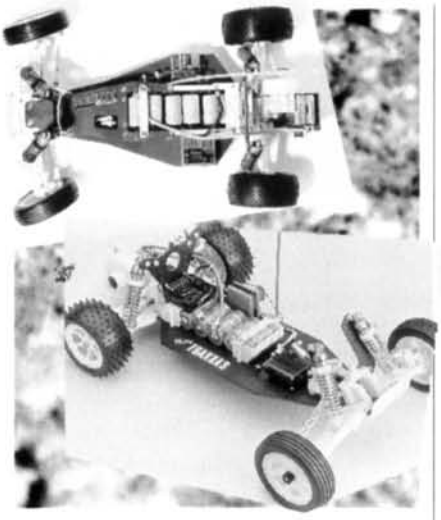
Converting a Losi buggy into a racing truck is, by far, the easiest conversion of all. The folks at Team Losi have taken all the guesswork out of it by including all the needed parts in one handy package. The A-0910 Monster Truck Conversion Kit comes with everything you'll need—right down to the tires, wheels, body and decals—to convert any Losi car into a full-blown LX-T. The kit also includes a complete LX-T instruction manual, a parts identification chart and a supplemental sheet with special assembly notes. The kit is designed to save you money, and it costs far less than the price of buying the parts individually.

If you're converting the newer Pro SE, you'll find that the kit comes with many parts that you already have; this is because the conversion kit is designed to convert any Losi car into an LX-T, and this includes all the early production models. The extra parts could be used as spares, so save them.

The Pro SE and the LX-T use the same chassis; this makes the conversion very easy, and it can be done in less than 45 minutes. So just think: you can race in two different classes with the same racing chassis.



Traxxas TRX-1 and TRX-3



The Traxxas TRX-1 isn't an ideal candidate for a racing-truck makeover. Although it's no longer in production, it's still a top-rate racing buggy, but it's completely different from its racing-truck cousin, the Blue Eagle LS. Similarly, the newer TRX-3 is completely different from the newer LS-II racing truck. The folks at Traxxas designed their racing trucks and racing buggies on separate drawing boards, and they share very few parts. I strongly recommend that you don't try to convert the newer TRX-3 into a racing truck because it simply wouldn't be feasible. The TRX-1, on the other hand, can be converted into a monster truck that's capable of spreading havoc throughout your neighborhood.

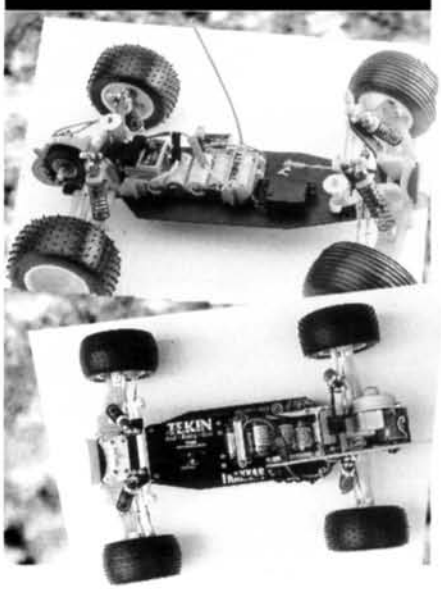
The first problem you'll encounter when you try to convert the TRX-1 into a racing truck is: it uses a chassis with a shorter wheelbase. If you don't replace the chassis, longer truck A-arms will give the truck a square stance, and this will cause it to spin out easily in the turns and feel twitchy on the straights.

Another problem with the conversion is that the TRX-1 has a very narrow front bulkhead that doesn't adapt well to a racing-truck application. The Blue Eagle LS has a wider front bulkhead, longer A-arms with inboard pivot points and deeply offset wheels. When you install the longer, truck A-arms and the deeply offset Blue Eagle front wheels on the narrow, buggy front bulkhead, the front track will be slightly narrower than the rear. To solve this, you can use early production Hawk front wheels that have zero offset.

The TRX-1 has an extremely smooth, three-gear racing tranny with a 2.14:1 gear reduction. This gear ratio is ideal for racing buggies, and when geared down, it will also work fairly well in a racing truck. The Blue Eagle, on the other hand, has a super-low 2.74:1 reduction, and this is better suited to the racing truck's larger-diameter wheels. What it comes down to is this: you can convert the TRX-1 into a rugged monster truck that's suitable for some serious backyard bashing, but converting the buggy into a competitive racing truck will require purchasing a new chassis and tranny. The cost of the chassis and tranny, combined with the other parts necessary to complete the conversion, will be almost as much as the cost of a complete LS-II kit, and you'd be much better off buying the complete kit.

TRX-1 CONVERSION PARTS LIST

- Long front A-arms—part no. 1931R
- Long rear A-arms—part no. 1955R
- Caster block—part no. 1932R
- Steering blocks and wheel spindles (L/R)—part no. 1637
- Stub axles—part no. 1952R
- Drive shafts—part no. 1951
- (3) 46mm turnbuckles—part no. 1936
- (3) 50mm turnbuckles—part no. 2334
- (2) 54mm turnbuckles—part no. 1937
- (2) lightweight dished wheels (front)—part no. 1974
- (2) lightweight dished wheels (rear)—part no. 1972
- Pro-Trax ribbed front tires—part no. 4780
- Pro-Trax spiked rear tires—part no. 4790
- Front body mounts—part no. 1914
- LS-II stadium-truck body—part no. 2511





Schumacher Cougar

The Schumacher Cougar 2 can be converted into its racing-truck cousin—the Storm—in less than 15 minutes. This is because the Cougar 2 racing buggy and the Storm racing truck use the same chassis, tranny and A-arms. The only parts you need for this conversion are the wheels, the tires, the shock towers/body mounts and a Storm body; this makes the conversion easy and economical.

If you're the proud owner of a newer Cougar 2000, there's very little you can do at this time to convert it into a competitive racing truck; but hold on to your transmitters because Schumacher plans to manufacture a new racing truck that's designed around the Cougar 2000 chassis.

COUGAR 2 TO STORM PARTS LIST

- Storm front shock tower with mounts—part no. U1250
- Storm rear shock tower with mounts—part no. U1251
- Storm front and rear wheels: yellow—part no. U396, or natural—part no. U1089
- Storm racing-truck body—part no. U5021
- Front and rear tires (Any 2.2 racing-truck tires will work.)



ADVERTISEMENT

TEAM LOSI TECH TALK

RECEIVER TIP

Here's a quick tip for mounting your receiver to the chassis. Instead of using two-sided tape (servo tape), try using Velcro® (hook and loop). Not only does it hold the receiver firmly in place, but it also has a couple of other benefits as well! First of all, the Velcro® doesn't mount the receiver solidly. This means that it is a more "shock absorbing" mount. The result is less vibration to the receiver and fewer radio glitches. Second, the receiver is very easy to remove and install. This is a real plus if you are using the same receiver in two cars, or if you just want to remove the receiver for some reason.

CONGRATULATIONS...AGAIN!

Congratulations go out again to Team Losi drivers for winning yet another race. This is getting to be a habit, but one that I enjoy. This time, congratulations go out to Jeremy Kortz, Brian Kinwald and Jon Anderson. Jeremy won the Invitational class at the 1994 Reedy Race of Champions, with Brian Kinwald in a close second-place finish. Both drivers piloted their Team Losi Double-X cars flawlessly during the 2WD portion of the event. With only four days to build and dial in his Double-X car, Brian managed to post the fastest overall time in the 2WD event. Jon Anderson then went on to win the 2WD Open class with his Double-X car. Congratulations to all three drivers for very fine performances.

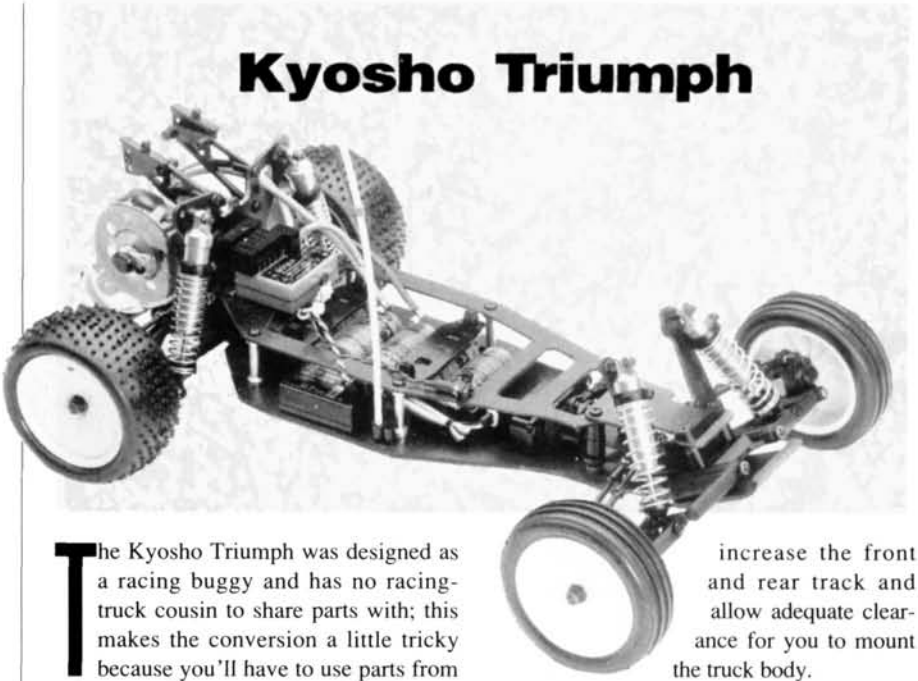
LIGHTER AND STIFFER?

Keep your eyes open! Very soon (probably by the time you read this) Team Losi will release graphite-filled plastic parts for the Double-X car. All of the parts made of the Stiffezel™ material, including suspension arms, chassis and stiffener, rear shock tower, etc., will be offered in a graphite version of the same material. These graphite parts are quite a bit lighter, and even stiffer, than the original Stiffezel™ material. I know it's hard to imagine a plastic material that's stiffer than the Stiffezel™, but it's true. These parts have been tested by the team with great success. Look for them at your local dealer.

* * *

Let us know what's going on! Address your questions and problems to Team Losi, "Tech Talk," 13848 Magnolia Ave., Dept. J, Chino, CA 91710.

Kyosho Triumph



The Kyosho Triumph was designed as a racing buggy and has no racing-truck cousin to share parts with; this makes the conversion a little tricky because you'll have to use parts from other manufacturers. Also, the Triumph has a very narrow front bulkhead and a chassis with a short wheelbase, which, as you know by now, doesn't work well on a racing truck. You can, however, turn it into a backyard basher of your own creation, and this will give your Triumph an entirely new personality.

One tricky part about the conversion is drilling matching holes in the narrow Kyosho front bulkhead and in the Losi body mount so that you can screw them together. The Associated rear body mounts will have to be ground down with a Dremel* to fit on the Kyosho rear shock tower. With these two minor inconveniences out of the way, the rest of the conversion is easy. The Kyosho truck wheels bolt right onto the Triumph, and they'll accept most 2.2 racing-truck tires. The Kyosho wheels aren't offset; this will increase the front and rear track and allow adequate clearance for you to mount the truck body.

TRIUMPH TRUCK CONVERSION PARTS LIST

- Kyosho front and rear wheels (natural)—part no. KYOC6383
- Team Losi LX-T front body mount—part no. A-4055
- Team Associated rear body mount—part no. 7323
- Team Losi LX-T stadium-truck body—part no. A-8014



BEST OF BOTH WORLDS

The best part about converting your racing buggy into a racing truck is that you can always turn it back into a buggy. The Team Losi Pro SE, the Team Associated RC10 Team Car and the Schumacher Cougar 2 can be converted into their racing-truck cousins—the LX-T, the RC10T and the Storm—in minutes, so you can have the best of both worlds with just one competitive chassis. The Traxxas TRX cars and the Kyosho Triumph can be transformed into monster trucks that are guaranteed to change the personality of your R/C vehicle. In R/C racing, it's OK to have a split personality, and you'll find all the therapy you need in any issue of *R/C Car Action*.

**Here are the addresses of the companies mentioned in this article:*
Associated Electrics Inc., *3585 Cadillac Ave., Costa Mesa, CA 92626; (714) 850-9337.*
Team Losi, *13848 Magnolia Ave., Chino, CA 91710; (909) 465-9400.*
Traxxas Corp., *12150 Shiloh Rd., # 120, Dallas, TX 75228; (214) 613-3300.*
Schumacher Inc., *6302 Benjamin Rd., Ste. 404, Tampa, FL 33634; (813) 889-9691.*
Kyosho/Great Planes Model Distributors, *P.O. Box 9021, Champaign, IL 61826; (217) 398-3630.*
Dremel, *4915 21st St., Racine, WI 53406.*

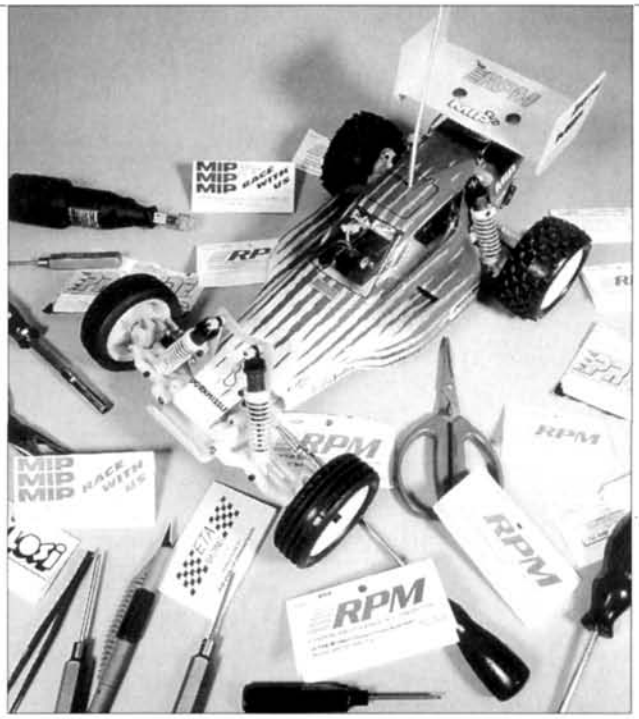
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PROJECT

Team Car

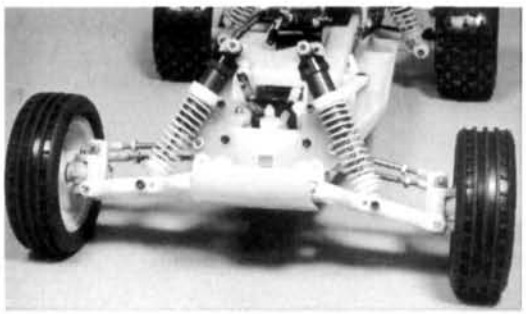
It's not your father's RC10!

by JOHN HOWELL



PHOTOS BY WALTER SIDAS

I WAS LOOKING around the *Car Action* impound shelves, trying to find something to drive at our local track when my eyes fell on Frank Masi's sano-looking Associated* Team Car. "Hmmm," I thought, "that will do the trick!" Luckily for me, Frank has been doing some testing with the new Team Losi Double-X, so his Team Car was on hiatus, waiting for its next assignment. I politely swiped his car while it was in for a pit stop and decided it was time to test a few of the latest aftermarket items that are available for this championship-winning ride.

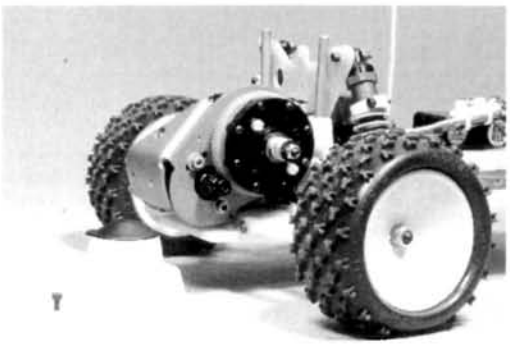


When using the RPM molded chassis, you have to use Associated's RC10T front shocks. I installed a set of RPM's Worlds springs on them.

I took the car home to disassemble and clean it *[editor's note: hey! It was clean!]*, and I started to think about the benefits of a molded chassis. Molded chassis are cheaper to produce than graphite or aluminum chassis, and this translates into a lower retail price for consumers. In addition, plastic is readily available, whereas graphite and even aluminum are sometimes hard to come by. And molded-plastic chassis won't cause radio interference as some graphite chassis do. Molded-plastic chassis are very race-worthy, and this was proved when Losi successfully used the plastic chassis from its Junior Two buggy on its national champion, the JRX-Pro SE.

If you think back to a few years ago, the hottest drivers swore by graphite and aluminum chassis. There were no ifs, ands, or buts about it! At the track, when the topic of molded-plastic chassis was brought up, the conversation shifted from race cars to basic, entry-level cars. The pendulum is starting to swing the other way now, though; many race-oriented companies have shifted their focus from graphite to injection molding. One of those companies, RPM*, has been concentrating intensely on that market and has produced a ton of cool molded-plastic components, including their own plastic chassis, the Ultra Molded Chassis for the Associated Team Car.

The RPM chassis was actually molded to complement RPM's "Worlds" front-end kit and their narrow rear-end kit (which are also available for the Team Car separately); both of these are included in the Ultra Molded Chassis kit. Everything is molded to accept the original car's components, and you'll find that you won't have to cut or shape to make things fit just right. The chassis is equipped with one of the smoothest ball-bearing bellcrank systems that I've ever seen; a molded-in battery box (with lid) that securely holds six cells; and all the hardware needed to complete the kit.



To help stabilize my car over bumpy, rutted tracks, I equipped it with Team Losi's Hydra Drive traction-control system.

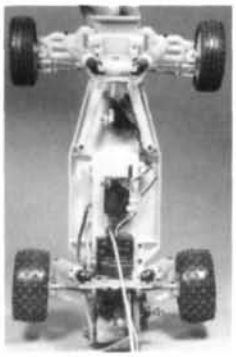


I replaced the Stealth tranny's stock felt gasket with this neoprene rubber gasket from ETA racing. It's a low-cost investment that every RC10 owner should check out.

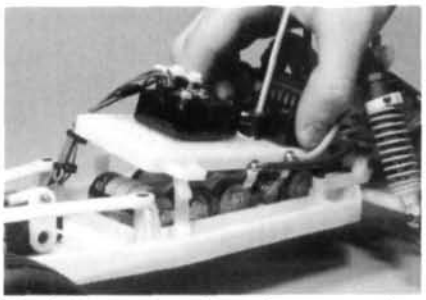
BUILDING PROCESS

I started by disassembling the Team Car, taking out all the electronics; then I moved to the rear of the car and took out the Stealth tranny. While I had the tranny out, I rebuilt the diff with MIP's* Stealth diff rebuild kit with carbide balls and a touch of Aero-

Car Technology's* Goo-Lube. When the diff action was silky smooth, I added to the tranny a Team Losi* Hydra Drive slipper unit filled with fluid of medium thickness. Then, when I had the tranny reassembled, I replaced the Stealth's felt gasket—which can become torn and may rub on the inner slipper-clutch plate and cause unneeded friction—with an ETA Racing* gasket that fits perfectly between the tranny and the motor plate. This gasket doesn't rub, and it's more durable.

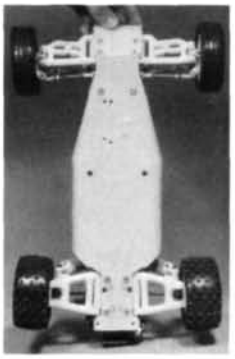


I mated the tranny to the RPM chassis, and while I was in the area, I installed a set of MIP's CVDs to replace the stock universals. You have to assemble the CVDs, and they went together without a hitch. In my opinion, these are the best after-market universals you can get for the RC10. For those of you who are unfamiliar with them, here's the scoop: CVDs feature near-zero backlash; they're hardened for strength; they provide positive acceleration; they last longer than stock U-joints; and they're completely rebuildable. Brian Kinwald, the 1993 IFMAR World Champ, uses them on his Team Car. I asked him why he prefers them, and he replied, "I use them mainly because they're more durable; they don't break or bend; they last a long time; and I like the fact that I can rebuild them whenever I have to." Well, that's good enough for me. What about you?

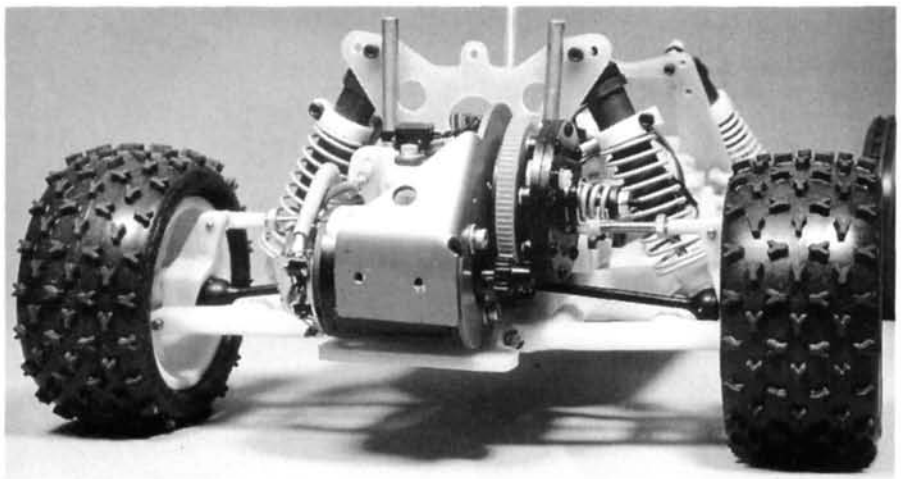


The battery cover also acts as a receiver and an ESC mount. Make sure that you leave yourself enough wire to remove the cover so you can get to your batteries.

Next, I took the rear shocks off the Team Car, and I replaced the standard 1.32 shock shafts with shorter, 1.02 shafts and an 1/8-inch spacer to limit down-travel. A lot of racers like to limit the rear travel in their cars so their drive shafts don't overextend and because they want just enough travel for track conditions and no more. Some people stick with the standard 1.32 shafts, and then they place a lot of spacers on the shaft to limit the travel. With the shorter, 1.02 shafts and the 1/8-inch spacers, there's less material in the shock body; this means more oil in the shock body—a definite plus!



After I had replaced the shafts, I refilled the shocks with Team Losi 350 Silatech and then bolted the shocks and RCPS* titanium tie rods with RPM rod ends to an RPM fiberglass shock tower. I was all set to work on the front end.



MIP CVDs replace the standard universals. While I had the tranny apart, I also used MIP's Stealth tranny diff rebuild kit.



I used Pro-Line's wheels, with their new Wide-5's up front and Y-pattern tires in the back.

FRONT END

The front end of the RPM Ultra Molded Chassis is equipped with a fiberglass shock tower, an ultra-smooth ball-bearing bellcrank steering system and a molded front bulkhead. I incorporated the Team Car's front uprights and steering blocks that are equipped with RCPS titanium hinge pins.

After I had installed RPM's yellow front shock springs, I placed an RPM one-piece molded center link between the two steering bellcranks. Then I hooked up all the steering linkages and switched my attention to setting up the electronics. I installed a Tekin* 411G ESC, a KO Propo* PS1001 servo and a Futaba* R113iP receiver. It's all controlled by a Futaba Magnum PCM 1024 radio system. RPM suggests that you mount your ESC and receiver on the top of the battery-tray lid. I'd rather mount them lower in the chassis, but I found it difficult to do so.

A Reedy* Mr. O (11-turn double) and a Reedy 1700 SCRC 6-cell battery pack get the car up to speed in a hurry. Other finishing touches include a full set of Pro-Line* tires and wheels (Wide-5 tires up front with Flat Stubbies in the back); one of Pro-Line's hot new Vision buggy bodies painted by the one and only Scot Bich*, who did an awesome job, as usual; and a trick, neon-green, molded wing from Associated.

PERFORMANCE

I was psyched to go out and test this car to see whether the modifications would make a major difference. Although the chassis seemed to be extremely durable, I could tell that it flexed a tiny bit more than the stock aluminum tub did. Would

(Continued on page 161)



Radio Control CAR ACTION

Team NOVAK PRESENT

8th Annual

REEDY RACE of Champions

by GEORGE GONZALEZ

PHOTOS BY GEORGE GONZALEZ

THE eighth Annual Reedy International Race of Champions, held from January 21 to 23, 1994, was sponsored by Car Action and Novak, hosted by the R/C Off-Road Raceway in Fountain Valley, CA, and dubbed "the party that never ends." The first Reedy Race started out as a birthday party for one of the industry's leading men—Mike Reedy, owner of Reedy Modifieds. Many top drivers organized an exhibition race. They wanted to treat Mike to some super-hot R/C racing, so they cut out the qualifying heats and raced in a six-Main point match. The rest is history.



MIP's Eustace Moore and Brian Kinwald discuss Kinwald's big switch to the Trinity/Team Losi team.

A BRIEF EXPLANATION

There are three classes of racing at the Reedy Race: 2WD Open, 4WD Open and the Invitational Class. Drivers have to earn the right to compete in the Invitational Class by their past performances at national or world-class events. The invited drivers face six consecutive Mains in 2WD and six consecutive Mains in 4WD. All the Mains are shuffled. (Before the race, each driver receives a pamphlet telling him who his competitors will be in each heat.) Points are awarded according to each driver's finishing position, but in this race, the driver with the lowest score is declared the winner. (A first-place finish is worth one point, a second-place finish is worth two, and so on.) Each driver's worst heat doesn't count except in the event of a tie. The points from the best five heats in both the 2WD and the 4WD Classes are then combined, and the driver with the lowest total score is declared the champion.

The 2WD and 4WD Open Classes are open to all drivers, and the race is run according to ROAR rules. Although no points are earned toward future sanctioned events, many of the best drivers from Japan, Europe and the U.S. compete in this class. Three rounds of qualifying heats are scheduled, and the race is won in a single, decisive A-Main. The winners of the 2WD and 4WD Classes are asked to race in the Invitational Class the next year.



Team Losi's Jeremy Kortz swept the 4WD Class and performed well enough in 2WD to take the overall win.



The 2WD overall winner, Team Associated's Mark Pavidis, readies his car for an upcoming race.

OPEN A-MAIN ACTION

• **2WD Open.** One interesting point about the Reedy Race was that the best Open Class times were just as fast as the Invitational Class times. In the 2WD Class, it was a battle of honor, as Team Losi's Jon Anderson had to prove that he still had what it takes to smoke the competition. (Anderson is a skilled Team Losi factory driver who didn't have the points necessary to make the Invitational Class.) The competition was as tough as they come. TQ Barry Baker had set his sights on winning a spot in the Invitational Class for the next year. Vince Stolo and Brian Barre were also in the running. After the end-of-race buzzer had sounded, there was a mad dash to the finish line. Anderson crossed first, with a 12/4:06.64. Barre followed, less than 2 seconds behind, and Baker took third.

• **4WD Open.** This class offered the hundreds of spectators what they had come for—pure racing

Kinwald Switches Rides

By far, the biggest surprise at the Reedy Race of Champions was finding Brian Kinwald at the Team Losi table. That's right; the 2WD IFMAR World Champion and former Team Associated driver is now driving a Double-X car for Team Losi. I talked briefly to "Pops" Losi about it.

GG: Tell me, Pops, what are your feelings about Brian Kinwald switching over to Trinity/Team Losi?

Pops: First of all, I think that Brian made the switch because he felt that being with Team Losi and Trinity was the best thing for his future. As far as we're concerned, we're thrilled and flattered because every time Brian races, he wants to win, and if he felt that he couldn't win with our products, he wouldn't have switched, no matter what the surrounding circumstances were. I feel very strongly that it's going to be a great association with Trinity, Losi and Brian.

GG: How are the rest of your drivers adjusting to Brian?

Pops: I think everyone is getting along well, but it's very important that all the drivers know that they are all important to us. It's not a one- or two-man team, and it never has been.

GG: How does the future look for Team Losi?

Pops: In addition to all the veteran drivers on our team, we have some young guys who are getting better, and, with the addition of Brian, we should do pretty well at the next Worlds.

REEDY RACE OF CHAMPIONS

action. After three gruelling rounds of qualifying, it was time for a showdown. Greg Hodapp and TQ Jason Ruona were both quick on the draw and managed to escape a giant, turn-1 pileup. From that point on, the two battled for first place. I've never seen so much position-swapping, and the drivers crossed the line almost simultaneously before the buzzer sounded to squeeze in an extra lap. Both cars were rubbing wheels the whole way to the finish. There was so much yelling and screaming that we couldn't even hear the announcer. The results? In order: Hodapp, 13/4:11.70; Ruona, 13/4:12.54; and Aaron Biner, 12/4:00.79. Congratulations to Hodapp and Anderson, who will be added to the Invitational list for next year's Reedy Race.



One of RCOR's race officials keeps a close eye on the racers' status after each heat.



Here are the Invitational Class winners of '94. Joining them next year will be Team Losi's Jon Anderson and Team Associated's Greg Hodapp.

INVITATIONAL RACE OF CHAMPIONS

• **2WD Invitational.** It seemed as if Team Associated's Mark Pavidis was on a mission—to win at all costs. I'd say that with four first-place finishes and one second-place finish, it was a mission accom-

INVITATIONAL CLASS

OVERALL 2WD/4WD COMBINED

Fin.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	Jeremy Kortz	Team Losi/Yokomo	Peak Performance	Orion	Novak	JR Remote	Jammin'/Yokomo	Losi
2	Brian Kinwald	Team Losi/Dukeomo	Trinity	Trinity	Novak	Airtronics	Jammin'/Yokomo	Team Losi/Pro-Line
3	Scott Hughes	Associated/Yokomo	Reedy	Reedy	Novak	Futaba	RCPS/Protech 4	Losi/Pro-Line
4	Craig Drescher	Associated/Schumacher	Reedy	Keil	Novak	KO Propo	RCPS/Schumacher	Pro-Line/Kyosho
5	Mark Pavidis	Associated/Dukeomo	Reedy	Reedy	Novak	Airtronics	RCPS/Yokomo	Losi/Pro-Line
6	Masami Hirosaka	Associated/Yokomo	Reedy	Yokomo	Novak	KO Propo	Associated/Yokomo	Losi/Pro-Line/Kyosho
7	Matt Francis	Associated/Dukemacher	Reedy	Reedy	Novak	Airtronics	RCPS/Schumacher	Losi/Pro-Line
8	Scott Brown	Team Losi/Kyosho	Peak Performance	Orion	Novak	JR Remote	Jammin'/Kyosho	Losi
9	Mark Francis	Associated/Yokomo	Reedy	Reedy	Novak	Airtronics	RCPS/Yokomo	Losi/Pro-Line
10	Matt Ledger	Associated/Dukeomo	Reedy	Reedy	Novak	JR Remote	RCPS/Yokomo	Losi/Pro-Line

2WD OPEN CLASS

Fin.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	Jon Anderson	Team Losi	Trinity	Trinity	Novak	Futaba	Jammin'	Losi
2	Brian Barre	Associated	Reedy	Reedy	Novak	Airtronics	RCPS	Losi/Pro-Line
3	Barry Baker	Associated	Reedy	Reedy	Novak	KO Propo	RCPS	Pro-Line
4	Robert Gillespie	Associated	Warlock	Racer's Edge	Novak	Airtronics	Racer's Edge	Losi/Kyosho
5	Ethan Erchinger	Team Losi	Peak Performance	Sanyo	Tekin	Airtronics	Jammin'	Losi
6	Paul Gurule	Associated	Fitch	Power Products	Tekin	Airtronics	RCPS	Losi/Pro-line
7	Vince Stolo	Team Losi	Peak Performance	Orion	Novak	JR Remote	Jammin'	Losi
8	Jason Ruona	Associated	Reedy	Reedy	Novak	Airtronics	RCPS	Losi/Pro-Line
9	Todd Cariseo	Associated	Reedy	Reedy	Novak	Airtronics	RCPS	Losi/Pro-Line
10	Taco Man	Team Losi	Matrix	Matrix	Tekin	Airtronics	Jammin'	Pro-Line/Losi

4WD OPEN CLASS

Fin.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	Greg Hodapp	Yokomo	Reedy	Reedy	Novak	JR Remote	RCPS	Losi/Pro-Line
2	Jason Ruona	Schumacher	Reedy	Reedy	Novak	Airtronics	Schumacher	Pro-Line
3	Aaron Biner	Dukeomo	Reedy	Reedy	Novak	Airtronics	Protech 4	Pro-Line
4	James Brown	Dukeomo	Peak Performance	Orion	Tekin	Airtronics	Yokomo	Pro-Line
5	Patrick McCarson	Schumacher	Precision	Badd Boyz	Tekin	Airtronics	Schumacher	Kyosho/Losi
6	Jeff Wittman	Schumacher	Matrix	Double Strike	Tekin	Airtronics	Schumacher	Pro-Line
7	Hirai Toshihiro	Yokomo	Atlas	Atlas	Sanwa	Sanwa	Yokomo	Kyosho
8	Sohrab Tavakoli	Yokomo	Reedy	Sanyo	Novak	Airtronics	Yokomo	Pro-Line
9	Chris Walrod	Kyosho	Peak Performance	Reedy	Tekin	Airtronics	HPI	Losi
10	Bret Reelfs	Kyosho	Reedy	Reedy	Novak	Airtronics	Kyosho	Pro-Line



Masami Hirosaka made the trek from Japan to sunny California. He placed second in the 4WD Invitational Class and finished a respectable sixth overall.

plished. Pavidis ended up with six points to win the 2WD Invitational. Trinity's Brian Kinwald took second with three first-, one second- and one third-place finish (eight points). Matt Francis' RC10 placed third with nine points.

• **4WD Invitational.** This was, by far, the most exciting event at the Reedy Race of Champions; it was also the event with the most surprises. Team Losi's Jeremy Kortz proved that he could win in any racing class by piloting his Yokomo YZ10 to victory. With four first and one second-place finish, totaling six points, he won the 4WD Invitational Class by a landslide. Four-wheel-drive IFMAR champion Masami Hirosaka was a constant force, and his three first-, one second- and one third-place finish gave him eight points and second place. In the third spot was Scott Hughes with 11 points.

After the points from the 2WD and 4WD Invitational Classes had been tallied, Team Losi and Peak Performance driver Jeremy Kortz, with a total of 17 points, was declared the champion of the Reedy International Race of Champions. Driving for Trinity and Team Losi, Brian Kinwald was second with 21 points. And with 22 points, Team Associated/Reedy driver Scott Hughes took third.

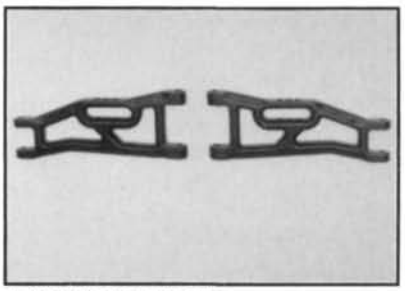
There's no doubt that the 1994 Reedy Invitational Race of Champions was the best ever. Some of the best racing teams from all over the world were there to wish Mike Reedy a happy birthday. I can't think of a better present than that. Can you? ■

RPM
CUSTOM ENGINEERED R.C. PRODUCTS

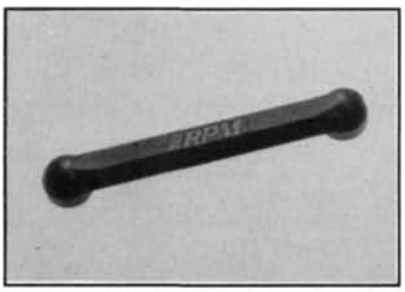
NEW for Losi "XX"



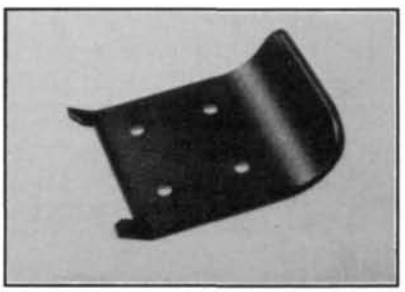
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CJ's Hobbies, 3761 Government Blvd., Mobile, AL 36693; C.J., (205) 666-0016

Dixie R/C Speedway, Rt. 10, Box 210, Gadsden, AL 35901; Craig Reynolds, (205) 442-1059

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Oak Mountain Raceway & R/C Club, 2624 Janice Circle, Birmingham, AL 35235; Will Barrett, (205) 856-7051

Performance R/C Hobby, 2600 A Beltline Rd., Decatur, AL 35603; Ray & Debra Steen, (205) 353-3399

Phenix Raceway, 2006 Opelika Rd., Phenix City, AL 36867; Casey Hoover, (205) 297-0040

Piedmont R/C Superspeedway, 41 Jewel Lane, Oxford, AL 36203; Terry Young or Greg Gaines, (205) 831-2986 or 831-1666

R/C Hi-Tech Raceway, 3303 Meridian St., Huntsville, AL 35811; Rick Chambers, (205) 539-1347

Satellite Hobbies, 2799 Rose Rd., Albertville, AL 35950; Troy or Jerry Smith, (205) 878-2526

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ARCORR, 2812 Spenard Rd., Anchorage, AK 99503; Jim Raffuse, (907) 277-7778

McKinley Hobby & Raceway, 2300 McKinley Dr., Wasilla, AK 99654; (907) 376-9351

Seth's Speedways, 3400 Hiland Dr., Anchorage, AK 99504; Seth Graham, (907) 337-3777

Southtown Hobby & Raceway, 12001 Industry Way #2, Anchorage, AK 99515; Bob or Vickie Peters, (907) 345-3131

Stump Hobby & Track, 13651 Jarui, Anchorage, AK 99504; Don Stump, (907) 345-8476

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Economy One-Stop Raceway, 4000 S. 4 Ave., Yuma, AZ 85366; (602) 344-3514

Finish Line Raceway, 7025 E. 21st. St., Tucson, AZ 85710; Jerry Kikkert, (602) 747-3633

Frank's Hobby House, 19401 N. Cave Creek Rd., Phoenix, AZ 85024; Marty, (602) 992-3495

G&S Raceway, 967 Hancock, Bullhead City, AZ 86442; Bob Olsen, (602) 758-1100

Havasu R/C Raceway, 1081 Desert View Dr., Lake Havasu City, AZ 86403; Bernie Coates, (602) 680-6304

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HobbyTown Raceway, 1915 East Baseline Rd., Gilbert, AZ 95234; Kenny, (602) 892-0405

HobbyTown Speedway, 2814 W. Bell Rd., Phoenix, AZ 85023; Mike Kaminski, (602) 993-0122

Outlaw Raceway, 5309 Lakewood Rd., Ft. Mohave, AZ 86427; Frank Greely, (602) 768-5001

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R/C Raceplex, 5222 W. Glendale Ave., Glendale, AZ 85301; Bill Murray, (602) 934-5567

R/C Sports Mania, 3550 N. 35th Ave., Phoenix, AZ 85017; Brian Dick, (602) 278-3671

Race Prep Raceway, 852 S. Hwy. 89, Chino Valley, AZ 86323; Mike Dunn, (602) 636-1955

Scale Racing Sports, 1120 N. Hayden Rd., Tempe, AZ 85281; Mike, (602) 829-9117

Sierra Vista Raceway, 105 N. Central Ave., Sierra Vista, AZ 85635; Wayne Tuthill Sr., (602) 459-1335

Speedway Hobbies, 1000 N. Humphreys St., #204, Flagstaff, AZ 86001; Gary McAllister, (602) 556-0710

Winslow Raceway, 813 E. 3rd St., Winslow, AZ 86047; Shawn Wilkie, (602) 289-2192

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Arkansas Int'l. Superspeedway, P.O. Box 1636, Pine Bluff, AR 71613; Joe Pitts, (501) 247-2371

DCA Racing, 412 Hiway & 14th St., Paragould, AR 72450; Lyle Spillman, (501) 236-9706

Performance Hobbies, 2222 Spence, Jonesboro, AR 72401; (Rick Winningham, (501) 935-6501

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Appletree Raceway, 1303 Hermosa Ave., Pacifica, CA 94044; Sonny Day, (415) 359-9755

ARO Hobbies Raceway, 24275 Sunnymead, Moreno Valley, CA 92553; George or Mike Kileen, (714) 924-3240

Art & Dean Raceway, 29409 Haguest, Lake Elsinole, CA 92530; Art, (714) 245-0920

Bob & Jim's R/C World, 3485 University Ave., Riverside, CA 92501; Bob Parcell, (714) 684-6314

Brake-a-Way Raceway, 3179 Hamner Ave., Norco, CA 91760; Debbie Burrie, (714) 736-6063

California Auto Racers (CAR), 96 San Tomas Aquino Rd., Campbell, CA 95008; Club Message Line, (415) 508-9971

Cats West Raceway, 5631 Old Lonetree Way, Antioch, CA 94509; Jerry Winkelbaver, (510) 779-0505

City Speedway, 7750 Convoy Ct., San Diego, CA 92111; (619) 560-9633

Cloverdale R/C Raceway, 1 Citrus Fair Dr., Cloverdale, CA 95425; Tom Kelley, (707) 586-9789; track, (707) 894-4468

Covina Racing Company, 1611 W. San Bernardino Rd., Covina, CA 91722; Tom, (818) 331-4984

Cycle Art Raceway, 2211 N. Pleasant Way, Fresno, CA 93705; Richard De Benedictis, (209) 233-3665

D&D Raceway, 290 S. First St., Turlock, CA 95380; Dave Miller, (209) 667-0970

D&S Raceways, 18981 Geer Ave., Hilmar, CA 95324; Joel Devine, (209) 632-4453

Desert R/C Raceway, 9231 E. Hobson Way, Blythe, CA 92225; Rodney Lazenby, (619) 922-5516

Drag City, 1361 W. Valley Blvd., Colton, CA 92324; Chris Gabriel, (714) 370-0580

Fast Eddie's R/C Raceway, 3261 Edward Ave., Santa Clara, CA 95054; Eddie Aflague, (408) 986-8256

Fast Lane, 25845 San Fernando Rd., #21, Saugus, CA 91350; (805) 255-2404

The Finest R/C Off-Road Circuit, 8711 Elder Creek Rd., Sacramento, CA 95820; Jason, (916) 381-6555

Frogtown R/C Raceway, Motherlode Hobbies, 3069 Hwy. 49, Angels Camp, CA 95222; (209) 736-4989

Gina's R/C Palace, 1839 Olympus Loop Dr., Vista, CA 92083; Gina Garner, (619) 598-8069

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The Land of R/C, 2717 Gerber Road, Suite B, Woodland, CA 95695; Le Forrest, (916) 666-1699

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Lucerne Valley Raceway, 32800 #4 Old Woman Springs, Lucerne Valley, CA 92356; Frank Rodrigue, (619) 248-7305

M.B. Raceway, 1031 Fremont, Alhambra, CA 91801; Tony or Dave, (818) 284-4198

Merced R/C Auto Racers (MRCAR), 779 E. Jefferson, El Nido, CA 95317; Steve or Kathleen Freitas, (209) 383-5352

MnM Hobbies, 137 N. Vander, Corona, CA 91720; Don Hughes, (909) 272-3545

One-Stop Raceway, 3782 Cerritos Ave., Los Alamitos, CA 90720; (213) 493-7597

Outlaw R/C Hobbies, 7920 Webster, Highland, CA 92346; Rick James, (909) 864-1770

Pegasus Raceway, 14643 Hawthorne Ave., Fontana, CA 92336; Ern Dog, Bob Cat, (909) 822-0226

Perris Recreation R/C Track, 120 N. Perris Blvd., Perris, CA 92370; Len or Fay Shirley, (714) 943-6603 or 657-4879

Pole Position Speedway, 43719 Sierra Hwy. #A, Lancaster, CA 93535; Cory Davis, (805) 948-1335

R/C Off-Road Raceway, 10810 Talbert Ave., Fountain Valley, CA 92708; Jeff Paul or Bob Fiege, (714) 965-9615

R/C Speedway and Hobbys, 1453 North Milpitas Blvd., Milpitas, CA 95035; Mike Melal, (408) 263-4228

R/C Racing Center and Hobbies, 9842 Channel Rd., Lakeside, CA 92040 (San Diego County); Russ or Cindy Escalera, (619) 443-2270

R/C Sports, 759 E. Monte Vista Ave., Vacaville, CA 95688; (707) 446-5555

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Roy's Raceway, 368 E. 11th St., Tracy, CA 95516; (209) 836-3513

RP Hobbies, 6650 Commerce Blvd. 21, Rohnert Park, CA 94928; (707) 586-3375

Sacramento Mini-Wheels Raceway, 8711 Elder Creek Rd., Sacramento, CA 95828; Paul Schiager, (916) 383-4011

San Diego R/C Car Club, P.O. Box 232456, San Diego, CA 92193; (619) 560-0089

Scott's Practice Track, 1131 Ramona Dr., Mt. Shasta, CA 96067; Scott Cleveland, (916) 926-1012

So. Cal R/C Raceway, 11930 Valley View St., Garden Grove, CA 92645; Jim Blauvelt, (714) 892-0088

Square Roundhouse R/C Speedway, 1468 Lander Ave., Turlock, CA 95380; (209) 668-4454

SRS Raceway, 915 N. Main St., Salinas, CA 93906; (408) 424-4044

Tanforan Action Track, Tanforan Shopping Center, San Bruno, CA 94066; Jerry Imboden, (415) 583-2683

Team Air Racing Club, 18208 Imperial Hwy., Yorba Linda, CA 92686; Don or Nicky, (714-579-7488

Tyler's RC/RD Racing Center, 6865 Flanders #D, San Diego, CA 92121; (619) 597-3072

Ultimate Hobbies, 2143 N. Tustin Ave. #6, Orange, CA 92665;(714) 921-0424

Valley R/C Race Park, 146 S. Santa Fe St., Hemet, CA 92344; Valley Wide Recreation, (714) 654-1505 or 658-4322

Ventura Road Runners/Freedom Park Raceway, 520 Freedom Park, Camarillo, CA 93010; Les Abramson, (805) 484-8920 or Ed Haney, (805) 499-8266

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White Mountain R/C Raceway, 174 West Line, Bishop, CA 93514; (619) 872-1599

Zero'n'4 Hobbies, 3360 S. Fairway, Visalia, CA 93277; Eddie McKay, (209) 733-1840

COLORADO

J.P.'s Raceway, P.O. Box 933, Ignacio, CO 81137; Jim A. Paul, (303) 563-0025

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Miracle R/C Speedway, 4206 Wadsworth Blvd., Wheatridge, CO 80034; Rob Brossman, (303) 420-3051

R/C Mini Sports, 6401 Broadway, Unit G, Denver, CO 80223; John Weins, (303) 426-0110

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CT R/C Off-Roaders, behind Old Field School, Fairfield, CT 06430; Mike Belmonte, (203) 661-0145

Hobby World Raceways, 161-6 Woodford Ave., Plainville, CT 06062; (203) 793-1111

JP's Hobbies & Track, 54 Wakelee St. Ext., Seymour, CT 06483; (800) 547-5772

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NERCAR, 36 Glendale Rd., Enfield, CT 06082; Phil Olsson, (203) 627-5410

R/C Madness, 640 Enfield St., P.O. Box 64, Enfield, CT 06082; Christopher Marcy, (203) 741-6501

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R/C World/Sugar Hollow Speedway, 66 Sugar Hollow Rd., Danbury, CT 06810; (203) 748-2185

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Mills Raceway, RD 2 Box 83D-8, Milford, DE 19963; Mike Roe, (302) 422-6766

T&C Raceway, Rt. 113 South, Georgetown, DE 19947; Sam Thompson Jr., (302) 856-3804

T.N.T. Hobbies & Raceway, 609 Stein Hwy., Seaford, DE 19973-0464; Thorpe Shatney, (302) 628-0520

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Broward County R/C Race Club, 2201 NW 9th Ave., Mills Pond Park, Ft. Lauderdale, FL 33314; Ed, (305) 480-9374 or John, (305) 925-8284

Challenger Speedway at the Willows, Willows Park & Okeechobee Blvd.,Royal Palm Beach, FL 33414; Walt, (407) 965-2790 or Mark, (407) 790-6917

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5-fifty-5 Raceway, 125 Second Terrace West, Winter Haven, FL 33880; Chuck Nolke, (813) 324-7406

First Coast International Speedway, P.O. Box 1342, Jacksonville, FL 32201-1342; Bob Thompson, (904) 743-2161

FYRE, 14160 Hwy. 441 (River Plaza), Tavares, FL 32728; Ray Salerno, (904) 357-1635

Gainesville R/C Speedway, 9311 SW 75 Way, Gainesville, FL 32608;Greg Rhodes (904) 495-3600

Greater Orlando Auto Racers, 970 Keller Rd., Altamonte Springs, FL 32714; Dave Mottin, (407) 293-7090

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Hialeah Hobby Raceway, 4562 W. 12 Ave., Hialeah, FL 33015; (305) 826-3702

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JARCAR Raceway, 7273 103rd St., Jacksonville, FL; Ray or Greg, (904) 772-9022

Kenny's Track & Hobby, 11125 U.S. 41 South, Gibsonton, FL 33534; Kenny Ryals, (813) 671-9123

Lake Whippoorwill International Speedway, 12345 Narcoossee Rd., Orlando, FL 32827; Bob Hosch, (407) 277-9586; fax (407) 277-2568

Louie Burton's R/C Raceway, 4215 Mustang Rd.,Lakeland, FL 33803 ; Louie Burton, (813) 665-1322

M&M R/C Raceway, 16921 Waterline Rd., Bradenton, FL 34202; Mike Williams, (813) 747-2889

Miami R/C Speedway, 12546 N. Kendall Dr., Miami, FL 33186; Jeff Mayorga or Pat Butler, (305) 271-3101

Miami Speedway, 7805 NW 148th St., Miami Lakes, FL 33014; Julio Romero, (305) 687-6728

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Pro Hobbies Speedway, 715 N. Lake Pleasant Rd., Apopka, FL 32712; (407) 886-4615

R/C Action, 646 Choy Lee Circle, Orlando, FL 32708; (407) 695-6746

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Southern Hobbies, 10 N. Magruder Ave., Orlando, FL 32805; Mike Spehn, (407) 521-7479

Southwest Florida R/C Raceway, 2425 Rivers Rd., Naples, FL 33964; Clyde Armstrong, (813) 455-1143

Sun Valley Speedway, Palmer Blvd., Sarasota, FL 34232; (813) 322-1200; (mailing address: Rt. 1, Box 443N, Myakka City, FL 34251)

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Thunder Road R/C Club, 3303 E. Johnson Ave., Pensacola, FL 32514; Steve Henderson, (904) 474-4857

TJ's R/C Raceway & Hobby Shop, 1010 Creighton Rd., Pensacola, FL 32504; John Jogan, (904) 479-2330

Treasure Coast R/C Club, 4931 Oleander, Fort Pierce, FL 34982; Lou, (407) 464-3207

West Coast R/C Club, Lake Park, 17203 N. Dale Marry, Tampa, FL 33549; Tim, (813) 932-3650; Bob, (813) 239-9630

Wilbur Avenue Raceway, 1848 Wilbur Ave., Vero Beach, FL 32960; (407) 567-1200

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ARCAR Raceway, 6894 Buford Hwy., Doraville, GA 30340; Greg Coan, (404) 448-4533

Carnesville R/C Speedway, Rt. 2, Box 2354, Carnesville, GA 30521; Bobby Maxwell or Byron Sartain, (404) 384-4870 or 384-4587

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The Racer's Edge, 1530 Hwy. 19 N., Thomaston, GA 30286; Roger or Mark Walls, (706) 648-2637, (706) 648-6534

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Silver Wings Raceway, 5611 Riverdale Rd., College Park, GA 30349; (404) 991-2225



Sugar Bowl R/C Speedway, 5272 North Ave., Sugar Hill, GA 30518; Shelley or Jan Bailey, (404) 945-6709



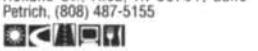
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K/M's Hobbies, 2305 Jasmine St., Honolulu, HI 76816; George Mirikirana, (808) 757-7135

Koha R/C Racing, 74-5563 Kaiwi St., Kailua-Kona, HI 96740; Hobby-Tronics, (808) 329-3072



R/C Motorsports Hawaii, 98-029 Hekaha St., Aiea, HI 96701; Lane Petrich, (808) 487-5155



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IDAHO

Capital Dirt Burners, 1945 N. Teare Ave., Meridian, ID 83642; Jim Brandon, (208) 888-7079



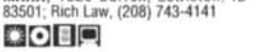
Dapco Hobbies, 2211 Garrett Way, Pocatello, ID 83201; Pat Talbert, (208) 233-8163



Falls Hobbies & R/C Raceway, 1515 Northgate Mile, Idaho Falls, ID 83401; (208) 529-8650



MARA, 1229 Burrell, Lewiston, ID 83501; Rich Law, (208) 743-4141

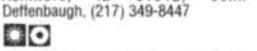


Victory Speedway, 5416 Anna St., Boise, ID 83705; Bruce Wallace, (208) 343-3113



ILLINOIS

Adam's Blast Track, RR 1, Box 370, Ashmore, IL 61912; John Deffenbaugh, (217) 349-8447



AJ's Raceway, Kesslinger Road, Dekalb, IL 60115; A.J. Schultz, (815) 756-2772



Ameri-Trac, R3, Box 242, Mattoon, IL 61938; (217) 234-8707



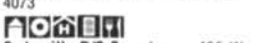
Badlands II, 320 W. Jackson St., Vandalia, IL 62471; (618) 283-2913



BARR, 809 River Dr., Byron, IL 61010; Jim Haynes, (815) 234-5615



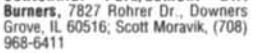
C&R Hobbies, 39 E. Jones, Milford, IL 60953; Ray Craighead, (815) 889-4073



Cedarville R/C Speedway , 430 W. Washington, Cedarville, IL 61013; Troy Pokoj, (815) 745-2885



Centennial Park/LeMont Dirt Burners, 7827 Rohrer Dr., Downers Grove, IL 60516; Scott Moravik, (708) 968-6411



Central Illinois R/C Car Club, 7015 N. Knoxville Ave., Peoria, IL 61614; Wayne Thompson, (309) 693-8885 or R/C Workshop, 3100 S.W. Adams, Peoria, IL 61605; (309) 673-4860



Central R/C Raceway, RR 2, Box 51-A, Carlinville, IL 62626; Tim Stewart, (217) 854-9718 or Don Rice, (217) 854-3785

Diehard R/C Raceway, 618 N. Main, Kewanee, IL 61443; Dick Jennings, (309) 854-0701

Eagle Speedway, 303 N. Plum St., Pontiac, IL 61764; Joe or Vickie Bachman, (815) 842-1738



4-H Park Raceway, P.O. Box 774, Pontiac, IL 61764;Joe or Vickie Bachman, (815) 842-1738



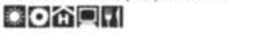
Hobby Raceway, 5027 4th Ave., Moline, IL 61265; Tony, (309) 755-5534



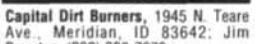
Hobby Town Raceway, 4611 W. Rt. 120, McHenry, IL 60050; Mike Hollingsworth (815) 344-1777



Howell Racing, 492 Egret Ave., Naples, IL 33963; PJ Howell, (708) 474-8821



JC Hobbies/Metro Motor Speedway, Metropolis Airport, Metropolis, IL 62960; (618) 524-9979



JMP Raceway, 952 Harrison Ave., Wood River, IL 62095; (618) 258-0297 or -0282



Lakeside Raceway, S. Germantown Rd., Breese, IL 62230; Scott Merian or Alan Poettiker, (618) 526-4861 or 654-2211



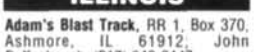
Leisure Hours Hobbies, 2872 Plainfield Rd., Joliet, IL 60435, (815) 439-1477

Lisle Community Park Raceway, 1825 Short St., Lisle, IL 60532; Jim Bernicky, (708) 416-6944

M&E Hobbies & Raceways, 300 N. Milwaukee Ave., Lake Villa, IL 60046; Mark Kaye, (708) 356-3224



Machesney Park, 1220 Shappert Dr., Machesney Park, IL 61115; (815) 282-1311



Magnum R/C Speedway, RR #2, Box 399, Danville, IL 61832; Terry & Nancy Dines, (217) 446-2472



Marty's R/C Hobby, 1335 E. Broadway, Bradley, IL 60915; Gail or Marty, (815) 933-8441

Mercer Co. R/C Off-Road, RR 3 Box 259, Milan, IL 61264; Jamie Wagal, (309) 534-8324

Midwest Hobby Trax, 114 Kirkland Cr., Unit A, Oswego, IL 60543; Duane Pierson or John Koonce, (708) 978-RACE



Monee R/C Raceway, 26049 Ridgeland Ave., Monee, IL 60449;Roy or Roberta Moody, (708) 534-2422 (track), (708) 799-5597

Peoria R/C Raceway, 518 Hillsdale Ave., Peoria, IL 61604; Ray Tigue, (309) 672-1780



Precision Speedway, 3919 17 St., East Moline, IL 61244; Dan Kennedy, (309) 796-2226



The R/C Track, 15022 S. Artesian, Harvey, IL 60426; Edmund Johnson, (708) 331-4079

Radio Active Raceways, 751 N. Bolingbrook Dr., #15, Bolingbrook, IL 60440; Jim or Lenny, (708) 759-7557

Redline Raceway, 921 Harding, Calumet City, IL 60409; (708) 862-8181

Rick's R/C Raceway, 122 W. 12th St., Streator, IL 61364; Rick Wallace, (815) 673-1870

Rockford Scale Raceway, 6900 N. 2nd St., Machesney Park, IL 61111; (815) 765-2970

SIRCAR Raceway, 1200 N. Marion, Carbondale, IL 62901; (618) 549-5885

Slot Wing Hobbies Race Place, 1615 W. Springfield, Champaign, IL 61821; (217) 359-1920

Smithton Community Park, P.O. Box 8152, Belleville, IL 62221; (618) 236-7569

Superior Raceway, 1706 W. Bradley, Champaign, IL 61821; (217) 359-8073

Thunderroad Speedway, Intersection of Broadway and Division, Coal City, IL 60416; (815) 634-8050

Tri-Star Racing, 3710 B Hwy 111, Pontoon Beach, IL 62040; Skip Bornmueller, (618) 931-1206

Valley Farms R/C Raceway, 706 Bypass 20, Cherry Valley, IL 61016; (815) 332-4516

WEP Speedway, RR#2 Box 44, Lawrenceville, IL 62439; Brad Volkman, (618) 884-9048

West Suburban R/C Raceway, 44 S. Villa Ave.,Villa Park, IL 60181; Calvin Bruce, (708) 834-7223

INDIANA

Autograph/Race World, 231 Pendleton Ave., Pendleton, IN 46064; Sam Mudd, (317) 778-3386

BJ's Riverside Raceway, 265 S. Clay St., Jasper, IN 47546; Joe Lorey, (812) 482-3484

Blaze'n Race'n, P.O. Box 6, Hamlet, IN 46532; James Berndt, (219) 867-1324

Boone County Raceway, 1300 E. 100 S. Rd., Lebanon, IN 46052; Jerri Moss or Allan Luper, (317) 482-4827

CC Hobby & Speedway, RR 1, Box 68, Francesville, IN 47946; (219) 567-2447

Classic Hobbies, 420 E. Commercial, Lowell, IN 46356; David Scheffler, (219) 696-0649

Clayhorn II, RR 4, Box 352I, Veedersburg, IN 47987; Mike Rogers, (317) 295-2582

County Line R/C, 2333 W. State Rd. 38, Sheridan, IN 46069; Greg Welch, (317) 758-6393

Elliott's R/C Raceway, 2140 North Plate, Kokomo, IN 46901; (317) 452-0163

Hobby Barn Raceway, 1950 Springhill, Terre Haute, IN 47802-9694; (812) 299-5773

Hobby Masters, 8501 Bash, Indianapolis, IN 46250; Jim Price, (317) 576-1961

The Hobby Prescription, 115 S. Indiana Ave., Auburn, IN 46706; Roxanne Fike, (219) 925-6699

Hobby World Raceway & Hobbies, 1508 N. Harlan, Evansville, IN 47711; Jeff Wassman, (812) 421-1100

Jam Raceway, 261 E. Main St., Bunker Hill, IN 46914; Jami Casavan, (317) 689-7507

K&L Hobbies & Raceway, 3275 North 525W, LaPorte, IN 46350; (219) 324-0353

Kokomo Hobby & Radio Raceway, 1108 E. Markland, Kokomo, IN 46901; (317) 457-5060

Main Hobbies, 625 Columbia, Lafayette, IN 47901; Randy Palmer, (317) 742-2045

Mooresville R/C Hobby, 7 Moore St., Mooresville, IN 46158; (317) 831-8877

Mooresville R/C Hobby, 9201 S. State Rd. 67, Camby, IN 46113; (317) 831-8877

P&T Hobbies and Raceway, RR 2 (Hwy 60), Mitchell, IN 47446; Paul Weber, Tom Logsdon, (812) 849-6666; fax, (812) 332-0018

R/C Barn, 310 N. 125 W., Monroe, IN 46772; Mark Lengerich, (219) 692-6600

R/C World of Indiana, RR #2, Box 335, Lynn, IN 47355; (317) 874-2464

R/C Zone & Raceway, 6380 W. 34th St., Indianapolis, IN 46224; Russ or Greg, (317) 290-0067

Race St. Raceway & Hobby, 11261/2 Race St., New Castle, IN 47362; John or Nancy Strong, (317) 521-4888

Raceway Park, 919 E. McKinley, Mishawaka, IN 46545; Bob Bean, (219) 256-1020

Rimfire Raceway and Hobby Shop, 8 Wood Ct., Hebron, IN 46341; Sandra Eaton, (219) 996-6288/shop, 987-2803/home

The Rink, 7900 Whitcomb, Merrillville, IN 46410; Don Reiner, (219) 769-8113

Runway Hobbies Raceway, 5342 Elmwood, St. J, Indianapolis, IN 46203; Randy Hyatt, (317) 784-2421

Winner's Circle Speedway, State Road 10 and 55, Roselawn, IN 46310; Harold Holmes, (219) 987-4106

IOWA

Barnyard Raceway, RR1, Box 243, Plainfield, IA 50666; Fred Good, (319) 276-4825

Devil's Valley, 919 4th Ave. So., Clinton, IA 52732; (319) 243-7516

Dubuque R/C Speedway, Dubuque County Fairgrounds, Dubuque, IA 52001; Paul Conlon, (319) 556-2736

Hobby Haven Raceway, 7672 Hickman Rd., Des Moines, IA 50322; Brion Oakley, (515) 276-8785

Kodiak Race Track, Box 78, Okoboji, IA 51355; Brad or Dave, (712) 332-7982

M&M Racetrack, 2434 Pilgrim Path, Oskaloosa, IA 52577; (515) 673-6265

Marble's Hobby Supply, 4685 SE 40th St., Des Moines, IA 50320; Rick Marble, (515) 262-7507

Mr. Car Raceway, Central Iowa Fairgrounds, Marshalltown, IA 50158; (515) 483-2234

North Park R/C Speedway, 805 S. Jerome, Algona, IA 50511; (515) 295-9352

Plymouth County R/C Speedway, 4th Ave. NE (Plymouth County Fairgrounds), LeMars, IA 51031; (712) 546-8788 or 546-9522

Power House Racing, 1200 S. Division St., Creston, IA 50801; (515) 782-4582 or 782-4174

Rotunda Raceway, 101 Bass, RR 1, Box 155A, Storm Lake, IA 50588; (712) 732-4555

Sibley Raceway, Osceola County Fairgrounds, Sibley, IA 51249; Allen Reck, (712) 754-2604

Southwest Iowa Hobbies 'n' R/C Raceway, 204 S. Broadway, Red Oak, IA 51566; Debbie Johnson (712) 623-5513

Spenser R/C Raceway, 419 Grand Ave., Spenser, IA 51301; Steve or Mike, (712) 262-2603 or -7864

Team Johnson Speedway, Jct. Hwy. 34 & 406, West Burlington, IA 52655; (319) 753-0753

KANSAS

Chad's R/C World & Raceway, 217 Brownie Ave., P.O. Box 76, Scranton, KS 66537; (913) 793-2313

Ebersole R/C Superspeedway, 11417 W. Hwy. 54, Wichita, KS 67209; Len Ebersole, (316) 722-8888

Pittsburg International Mini Speedway, 5111/2 N. Locust, Pittsburg, KS 66762; (316) 232-1973

R/C Superdome & TQ Pro Shop, 14 E. Ave. A, Hutchinson, KS 67501; (316) 665-6633

R/C World Raceway, 217 Brownie Ave., Scranton, KS 66537; Corky or Pam Green, (913) 793-2313

Track Directory

R&R R/C Raceway, 900 N. Santa Fe, Salina, KS 67401; (913) 823-7062

RCRC Raceway, 507 N. 4th, Atwood, KS 67730; Bob Dunker, (913) 626-3261

S&K Hobby Shop, 1313 S.W. 21st St., Topeka, KS 66604; Joe Knernschield, (913) 357-0104

Shawnee Hobby & R/C Raceway, 4603 Shawnee Dr., Kansas City, KS 66106; Bill Pugh, (913) 384-3211

The Speed Zone, 12809 Pflumm, Olathe, KS 66062; Brian Bierman, (913) 829-5287

KENTUCKY

A&J Raceway, Hc-64, Box 322-A, Lily, KY 40740; Al Smith, (606) 523-9710

Bluegrass Int'l/Perry's R/C Hobbies, 214 Globe St., Radcliff, KY 40160; William Perry, (502) 351-RACE

Checkered Flag Raceway, 1790 Bryan Station Rd.., Lexington, KY 40505; Billy or Jay, (606) 293-6825

East Kentucky Hobby Raceway, Hwy 15, Garner Mt., Isom, KY 41824; (606) 633-8567

Fast Lane Hobbies & Raceway, 281 Porter Pike, Bowling Green, KY 42101; Greg Bailey, (502) 782-2419

Hobby Center Inc., 2106 Triplett St., Owensboro, KY 42303; Bobby Howell, (502) 683-7611

Hobbys Plus, 819 Main St., Hazard, KY 41701; Joe Mavaro, (606) 436-3175

The Lexington Autodrome Raceway, 2753 Richmond Rd., Lexington, KY 40509; (606) 269-7794

Mayfield R/C Club, Route 8 Box 2, Mayfield, KY 42066; Ronny Glisson, (502) 674-5633

ProTrak R/C Racing, 3451 Cane Run Rd., Louisville, KY 40211; Tony Hardin, (502) 778-2657

Remote-Control Hobby Shop/ Raceways, Rt. 8, Box 211, Mayfield, KY 42066; (502) 247-4715

River Cities Raceworld, 1104 Powell Ln., Flatwoods, KY 41139; (606) 836-CARS

Tri-City R/C Raceway, 2420 Riggle St., Ashland, KY 41101, Eddie Williams, (606) 324-6305.

West Kentucky R/C Cars, 45 Hawkins Loop, Symsonia, KY 42082; (502) 851-3534

LOUISIANA

Acadiana R/C Hobbies & Raceway, 120 Toledo Dr., Lafayette, LA 70506; (318) 235-5825

Baha Raceways, 2225 Hickory Ave., Harahan, LA 70123; Bruce or Dan Rodriguez, (504) 737-6988

Cajun R/C Raceway, Rt. 2, Box 288 (Hwy. 343, Bosco) Church Point, LA 70525; Ray Thibodeaux, (318) 873-3855

Cajun R/C Raceway, 110 A Darbonne, Sulphur, LA 70663; Sandy Thibodeaux, (318) 527-9129

Loupe's R/C, 888A Madeline Ct., Baton Rouge, LA 70815; Mark Loupe, (504) 927-6275

Red Dirt Raceway, 324 Pitkin Rd., Leesville, LA 71446; CJ Hall, (318) 535-9238

Red River R/C, 3232 East 70th, Shreveport, LA 71105; David Gray or Sean Cleveland, (318) 747-1863 or 868-6932

T&M Pro Hobbies, 9212 W. Judge Perez Dr., Chalmette, LA 70043; Tom/Melodie Barthel, (504) 271-3111

MAINE

Central Maine R/C Speedway, 18 Lithgow St., Winslow, ME, 04901; David Prescott, (207) 877-2232

Clay Bowl R/C Hobbies, P.O. Box 61, Greene, ME 04236; Pat Cap, (207) 946-5003

Sabattus R/C Raceway, 247 Gardiner Rd., Sabattus, ME 04280; Larry Desrosiers, (207) 225-2027

Hobbies Plus, 479 Elm St., Biddeford, ME 04005; John Williams, (207) 282-8838

Lake Region R/C Raceway, Route 302, Bridgton, ME 04009; George Kosiavelan, (207) 647-8831

Mementos Hobby Shop, 86 Sweden St., Caribou, ME 04736; (207) 498-3711

Rocket R/C Hobbies, Annabessacook Rd., Winthrop, ME 04364; (207) 377-6910

Sanford Speedway, 479C Elm St., Biddeford, ME 04005; (207) 282-8838

The Racers' Club, 85 Hubbard Rd., Berwick, ME 03901; (207) 698-5337

Wallbanger Heaven, 50 Elm St., Houlton, ME 04730; Jack Newman, (207) 532-3169

MARYLAND

ABC Raceway, 2825 Ocean Gateway, Cambridge, MD 21613; (301) 228-4291

Cockeysville Astrodome, 10824 York Rd., Cockeysville, MD 21030; (410) 666-2521

Doug's Hobby Shop Raceway, 2935 Crain Hwy., Waldorf, MD 20601; (301) 843-7774

Friendship Off-Road Racers, 1531 Florida Ave., Severn, MD 21144; (301) 551-3050

Fruitland Indoor Race Center, 203 N. Fruitland Blvd., Fruitland, MD 21826; Thomas Duncan, (410) 543-4329

Radio Control Cars Inc., 13600-A Annapolis, Bowie, MD 20715; Paul Fauth, (301) 262-1444

Suzie Goose Hobbies, 718 E. Gude Dr., Rockville, MD 20850; (301) 279-2966

The Track, 16806 Oakmont Ave., Gaithersburg, MD 20877; Mimi Wong, (301) 417-9630

Wolfland Hobbies and Raceway, 2072 Crain Hwy., Waldorf, MD 20601; Perry Pritchard, (301) 870-0293

MASSACHUSETTS

Archer's Lane R/C Raceway, 11B Washington St. (Rt. 1), S. Attleboro, MA 02730; (508) 399-6762

C&C Hobby & Raceway, 562 Russels Mills Rd., S. Dartmouth, MA 02748; (508) 997-4131

Centerline Hobbies, 167 Corporation Rd., Hyannis, MA 02601; (508) 771-1244

CKS Raceway, 46 Wilbraham St., Palmer, MA 01069; (413) 283-2260

Hi-Tech Hobbies, 1681 Broadway (Rt. 138),Raynham, MA 02767; Ruben, (508) 880-5373

Julio's Hobby & Speedway, 1275 Main St. (Rt. 109) Milis, MA 02767;Ruben, (508) 880-5373

Megadrome Raceway/BRCCR, N. Adams Plaza, Rt. 8, North Adams, MA 01247; Gordon, (413) 663-9593; Richard, (413) 445-4777; Warren, (413) 442-2566

Mike's Speedway, 1210 Federal St. (Rt. 9), Belchertown, MA 01035; Steve or Mike, (413) 253-9312

Naytrix Raceway, Holmes Rd., Pittsfield, MA 01201; Rick Welch or Nate Zuckerman (413) 443-2488 or 443-9886

North East Auto Racers, P.O. Box 12, Merrimac, MA 01860;George Denault, (508) 346-8456

R/C Hobbies & Speedway, 562B Reed Rd., N. Dartmouth, MA 02747; Rick or Dave, (508) 991-5040

West St. Hobbies, 114C Main St., Medway, MA 02053; (508) 533-1231

MICHIGAN

Baja Bayou Off-Road Raceway, 5313 W 22 Mile Rd., Tustin, MI 49688; Mike Langworthy, (616) 829-3447

Can-Am Hobbies Speedway Park, 1152 Gratiot, Marysville, MI 48040; Don Grinde, (313) 364-3338

Central Michigan R/C Raceway, 1270 James Savage, Midland, MI 48640; Mark Siebert, (517) 631-1488

Cereal City R/C Off-Roaders, 2000 E. Columbia Ave., Battle Creek, MI 49015; (616) 963-2506

Chatter Box Racing, P.O. Box 164, Old State Rd., Central Lake, MI 49622; Bill Altergott, (616) 544-9829

Dirt Slingers Raceway, 2460 S. M139, Benton Harbor, MI 49022; Tom Edwards, (616) 927-1431

DNR Speedways, 4630 Hill Rd., Harbor Beach, MI 48441; Kelcey, (517) 479-6097

Doug's Dirt Way, 5210 Colby Rd., Owosso, MI 48867; Doug Conn, (517) 723-3368

Elmer's R/C Speedway, 2683 Lakeshore Dr., Niles, MI 49120; Randy or Kristi Easton, (616) 683-7380

Farwell Park Raceway, 2781 E. Outer Dr., Detroit, MI 48234; Eddie McCray, (313) 967-0805

Fun Tyme High-Banked Oval, Fun Tyme Adventure Park, 6295 E. Saginaw Hwy., Grand Ledge, MI 48837; (517) 655-5503

Harrison International Speedway, 3519 N. Clare Ave., Harrison, MI 48625; John Starkweather, (517) 539-2921

JJ's R/C Speedshop, 5645 E. 13 Mile Rd., Warren, MI 48092; (313) 977-0420

JT Superspeedway, 825 Golden Ave., Battle Creek, MI 49017; Jerry or Dan, (616) 965-0571

Larry's Performance R/C's, 3430 Highland Rd., Waterford, MI 48328; Larry Rossi, (313) 683-5529

Ludington R/C Raceway, 1483 N. Dennis Rd., Ludington, MI 49431; (616) 843-4654

Mason County R/C Car Track, West Shore Community College, (611 N. Washington Ave., Ludington, MI 49431) Scottsville, MI 49454; (616) 843-8553 or 843-4837

MC-RC Raceway, 4601 Page Ave., Jackson, MI 49203; Sam Sprang, (517) 787-9161

Mikey's Raceway, 7 North St., Yale, MI 48097; Mike Huber, (313) 387-4308

NMRCC Raceway, 110 N. Ostego, Gaylord, MI 49735; Ed Schneider, (517) 732-3963

Newberry R/C Raceway, RR 3 Box 2860, McMillan, MI 49853; Frank, (517) 773-5711

Pointe R/C, 2119 Summerton Rd., Mt. Pleasant, MI 48858; (906) 293-3044

R&B Raceways, P.O. Box 24, St. Louis, MI 48880; Russ or Brian Weaver, (517) 681-3688 or (517) 463-1886

R&L Hobbies, 9782 Portage Rd., Kalamazoo, MI 49002; Rex Simpson, (616) 323-3686, fax (616) 329-1744

R&S Hobbies & Raceway, 230 Mill St., St. Louis, MI 48801; Rich Beard or Scott Davis, (517) 681-3463

Rad & Bad Raceway, 810 S. Martin Rd., Gladwin, MI 48624; Mick Bushong, (517) 426-4373

Radio Wave Hobbies, 14000 Old 14 Mile Rd., Greenville, MI 48838; (616) 754-2170

Rider's Superspeedway, 42040 Koppernick, Ste. 400, Canton, MI 48187; Brent Martin, (313) 451-5599

Rider's Superspeedway, 4415 S. Westledge, Kalamazoo, MI 49008; Ken Penn (616) 349-2666

Sugar Ray's Raceway, 1948 Ford, Wyandotte, MI 48192; Ray or Kathy, (313) 281-3520

T/A Raceway, 119 N. Michigan, Big Rapids, MI 49307; Harvey, (616) 796-3217

Thumb Raceway, 3441 S. Main St., Marlette, MI 48453; (517) 635-7848

TNT R/C Raceway, 130 W. Washington St., Marquette, MI 49855; Gregory Berg, (906) 228-4098

USA Raceways, 6803 Dixie Hwy., Bridgeport, MI 48722; (517) 777-7USA

Village Hobbies-n-Crafts, 195 N. Elm, Hesperia, MI 49421; Alan or Fran, (616) 854-1374

Westside R/C Raceway, 4335 Lake Michigan Dr., Grand Rapids, MI 49504; George Oriikowski, (616) 791-9902. (Open May through August.)

MINNESOTA

ABC Raceway, 120 2nd St. NW, Pipestone, MN 56164; Ross Lange, (507) 825-5065

Ceason Sport & Hobby, 312 N. Bdwy, Crookston, MN 56716; Caesar Kaiser, (218) 281-6665

Dr. Skate's R/C Raceway, Frontage Road, La Cresent, MN 54601; Gary Behrens, (608) 788-6141

Greater Minnesota Racin' Place, 3302 Southway Dr., St. Cloud, MN 56301; Jon Jackson, (612) 252-9768

Minn-E-Golf & Hobby, 9100 Park Ave., Elk River, MN 55330; (612) 441-8365

The PBR Off-Road Rally, 721 Cedar Ave., Hector, MN 55342; Philip Zempel, (812) 848-2129

Range Racing World, Inc., 412 Jones St., Eveleth, MN 55734; Bill, (218) 744-4423

Southside Speedway, 2241 Marion Rd. SE, Rochester, MN 55904; Kevin, (507) 281-3233

Squid's R/C Autos, 924 Main Avenue, Moorhead, MN 56560; Jeff Greenwell, (218) 233-3554

Trackside Racing, 2300 Myrtle Ave., St. Paul, MN 55114; Winton Oftelie, (612) 644-3424

Wild West R/C Speedway, 2822 Piedmont Ave., Duluth, MN 55811; Roger Deloach, (218) 727-6248

MISSISSIPPI

Crossroads Raceway, 904 Cass St., Corinth, MS 38834; (601) 287-2110

Dixieland R/C Speedway, 2535 Tabernacle Rd., Columbus, MS 39702; Jeffrey Alvey, (601) 328-9429

Fast Freddy's Raceway, 20390 Hwy. 49, Saucier, MS 39574; Mark Payne, (601) 832-0315

Joe McFaden Hobbies, 1619 51st Ave., Meridian, MS 39307; Joe McFaden, (601) 483-7000

Norm's R/C Hobbies, 602 W. Old Pass Rd., Long Beach, MS 39560; Norm, (601) 863-0524

Small Cars Unlimited, 820 Cooper Rd., Jackson, MS 39212; (601) 372-FAST

MISSOURI

All Seasons Hobby, 152 O'Fallon Plaza, O'Fallon, MO 63366; Bob Daniels, (314) 281-8767

Blue Speedway, 12019 E. 47th St., Kansas City, MO 64133; Mark Randol, (816) 358-0238

Doug's Hobbies, 5221 Veil of Tears, Jefferson City, MO 65109; (314) 893-5861

Fast Eddie's, 10 S. Coffman, Flat River, MO 63601; Eddie Smith, (314) 431-3303

Fast Trax Racing Assoc., mailing: 206 N. Water,Nixa, MO 65714; track:318 Boonville, Springfield, MO 65082;Juan Monteil, (417) 725-4337

Gateway R/C Track & Hobbies, 255 Marshal Rd., P.O. Box 345, Valley Park, MO 63088; (314) 225-5844

Harrisonville Hobby Shop & Raceway, 2301 S. Commercial, Harrisonville, MO 64701; Richard Taylor, (816) 887-3055

Hobbies 'n' Stuff Raceway, 102 W. Pearce Blvd., Wentzville, MO 63385; John Gerhardt, (314) 327-6006

Lafayette Riverside Raceway, P.O. Box 9663, Marshall Rd., Kirkwood, MO 63122; Don Laningham, (314) 966-8912

Owensville Raceway, Hobby Shop & More, 115 N. First St., Owensville, MO 65066; Mike Brune, (314) 764-3461

Pevely R/C Raceway, 2199 Meadow, Barhart, MO 63012; Jerry Benz, (314) 464-8627

R+ Hobby, 590 Jungemann Rd., St. Peters, MO 63376; (314) 928-9838

S&P Performance Shop, 5383 Highway "N," St. Charles, MO 63304; Paul Lund, (314) 447-5252

Suppenbach Winter Racing, Route 5, Box 66, Pleasant Hill, MO 64080; Larry Suppenbach, (816) 987-5828

MONTANA

Bozeman R/C Powerhouse Track, west side of the Main Mall, Bozeman, MT 59715; (406) 586-6461

Garden City Raceway, 118851/2 Hwy. 93, Lolo, MT 59847; Dave Erickson, (406) 273-2776

Hobbytown Raceway, 17 Tai Lane, Bozeman, MT 59715; Tom Duncan, (406) 587-3512

Magic City R/C Raceway, 14th St. W. & Central Ave., Billings, MT 59101; (406) 259-9004

Pockets Raceway, Montana State Fairgrounds, Great Falls, MT 59405; Greg Vetter, (406) 761-7279

Stormer Raceway, 23 High Speed Road, Glasgow, MT 59230; Mike Stormer, (406) 228-4569

NEBRASKA

Hobby Town USA, Park Island Square, 3537 W. 13th St., Grand Island, NE 68803; Ed Conroy, (308) 382-3451

Mr. Bill's, 450 West 2nd St., Hastings, NE 68901; Bill J. Ries, (402) 462-4865

Over the Wall Gang, Higiroabee Speedway, 401 Market Pl., Norfolk, NE 68701; Matt Moeller, (402) 379-0879

RACE Raceway, 100757 Rd. J, Mitchell, NE 69357; Randy Schamaman, (308) 623-1490

Riverside Raceway, Hwy. 77 South, Fremont, NE 68025; Jeff Richter, (402) 721-3379

The Salvation Army, 4032 Harrison St., Omaha, NE 68147-1012; Lt. Michael Delashmit, (402) 634-3414

Sidney R/C Oval Racers, 932 10th Ave., Sidney, NE 69162; Gale Talich, (308) 254-3131

NEVADA

AMS R/C Raceway, 1130 Icehouse Ave., Sparks, NV 89431; Terry Ramsey, (702) 355-8803

Little City Hobbies Raceway, 640 Kuenzki, Reno, NV 89503; shop, (702) 786-3611 or Bill Avery, (702) 358-7629

R/C Fever, 3580 Polaris, Suite 2, Las Vegas, NV 89103; Jim or Darin, (702) 367-RACE

Silverbowl Speedway, 7274 Hardtack Cir., Las Vegas, NV 89119; Mike, (702) 896-3577

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Western R/C, 6404 Richmar, Las Vegas, NV 89139; Randy Grigg or Mitch Strete, (702) 897-7227

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Fastracker Club, 520 Washington St., Keene, NH 03431; Bill Phillips or John O'Connor, (603) 352-0811 or 357-8393

4-K Racing, 100 Warwick Rd., Winchester, NH 03470; (603) 239-6207

Hobby Etc., Heritage Place, Rt. 101A, Amherst, NH 03031; (603) 595-8549

Hooksett Hobby Raceway, 1328 Hooksett Rd., Hooksett, NH 03106; (603) 625-2420

Lake Region R/C Speedway, Lily Pond Rd., Laconia, NH 03246; Louie Blais, (603) 524-2909

NE Hobbies R/C Raceway, 49 Eaton Hill Rd., Auburn, NH 03032; Chuck Therriault, (603) 483-2274

Robert's Railroad & Hobbies, Box 431, Rt. 4 at Rt. 152, Northwood, NH 03261; Robert Jeffers, (603) 942-5193

NEW JERSEY

Al & Rich's R/C Speedway, 90 S. White Horse, Hammonton, NJ 08037; Ray Murray, (609) 561-7584

Dave Bicknell Memorial Raceway, P.O. Box 1445, Absecon, NJ 08201; Rob Caruso, (609) 965-0263

EMC Tracks & Trains, 1235 Rt. 23 South, Wayne, NJ 07470; (201) 628-4838

Family Hobbies Raceway, NW Blvd. & Weymouth Rd., Vineland, NJ 08630; Linda Vogel, (609) 696-5790

Golden Hobbies & Crafts, 415A Erial Rd., Pine Hill, NJ 08021; (609) 782-1222

Hackettstown Family Skating Center, 13 Rte. 57, Hackettstown, NJ 07840; Bob Powers, (908) 852-8726

Jackson R/C Racing, Marshall Ave., Jackson, NJ 08527; (908) 905-1593

LBRA Track, 392 Warburton Pl., Long Branch, NJ 07740; (908) 222-5122

Mike and Tom's Dragway, 2 Barber Dr., Hillsborough, NJ 08502; Mike, (908) 359-4475

Millville R/C Raceway, Ceaderville Rd., Millville, NJ 08332; Bill Densten, 327-4640

Parlor Hobbies, 34 Broad St., Matawan, NJ 07747; Charlie Roder, (908) 566-3158

Pit Stop Dragway, Campus Rd., Totowa, NJ 07512; Kimberly Frank, (201) 942-5955

Pixley International Speedway, 763 Peters Dr., P.O. Box 189, Martinsville, NJ 08836; Richard Toole, (908) 560-0399

The Race Place, 1151 Hwy. 33, Farmingdale, NJ 07731; John Fary, (908) 938-5215

Radical Raceway, 100 Rt. 17S, Lodi, NJ 07727; Lou, (201) 843-6996

Ricky G's Raceway, 2208A Hamilton Blvd., South Plainfield, NJ 07080; (908) 753-1518

S&M Speedway, 4 Field Rd., Bedminster, NJ 07921; Lee Spano, (908) 234-2750

Spernoll Speedway, 2301 Rte. 9 North, Great American Flea Market, Howell, NJ 07731; Mitch, (908) 577-9191

Tri-Oval Speedway & R/C Center, 296 S. Main St., Phillipsburg, NJ 08865; (908) 454-2223

Truck Challenge, 1162 Rt. 202-206 N., Bridgewater, NJ 08807; Michael Gill, (908) 658-9616

Zepplin Hobbies, 92 Rt. 23N, Riverdale, NJ 07457; Lou Ballini, (201) 831-7717

NEW MEXICO

Hobby Connection Raceway, 1713 Indian Wells Rd., Alamogordo, NM 88310; Terry Billings, (505) 437-0885

Roswell R/C Raceway, 1004 N. Greenwood, Roswell, NM 88201; Larry Jumper, (505) 623-6693

TRC Race Park, 1303 E. 8th St., Truth or Consequences, NM 87901; Gary Whitehead, (505) 894-3211

NEW YORK

A&C Speedworld, 1930 Lakeville Avon Rd., Avon, NY 14414; (716) 226-2460

A&D's FasTracks, 1000 N. Main St., Brewster, NY 10509; (914) 279-2065

A&S Race Center & Hobbies, 120 Cayuga St., Canalview Mall, Fulton, NY 13069; (315) 598-2772

Adirondack International, 66 Elm St., Warrensburg, NY 12885; Matt or Jake Wiedman (518) 623-9611

Aldon Speedway, 100 Castle St., Geneva, NY 14456; (315) 789-8343

Brockport Speedway, 6000 Sweden Walker Rd., Brockport, NY 14420; Gil & Betty Glidden, (716) 637-6224

Brownie's Pro & Sport Hobbies, 124 Bennett St., Staten Island, NY 10302-1426; John Brown, (718) 727-2194

Cars, R/C & Guitars, 4360 Seneca St., West Seneca, NY 14224; (716) 674-0905

Capital District R/C Racers, 27 Venus Dr., Albany, NY 12205; Keith Green, (518) 783-7859

Catskill Regional R/C Raceway, Glasco Turnpike, Mt. Marion, NY 12456; (914) 339-3294

Central New York R/C Auto Racers, Martin St., P.O. Box 116, Rome, NY 13440; John Orr, (315) 336-5140

Chipmunk Hill R/C Speedway, 217 Pine St., Theresa, NY 13961; Ted House, (315) 628-5065

Creekside R/C Raceway Park, 5242 Route 228, Trumansburg, NY 14886; Lawrence C. Updike, (607) 387-5513 after 6 pm.

D&J's Speedway, 94 Maple St., Croton-on-Hudson, NY 10520; Dan Spatta, (914) 271-5797

Daytona Miniature Raceway, 59 Lamar St., W. Babylon, NY 11704; (516) 491-4041

Dirt Track, 17 Fairway Dr., Manorville, NY 11949; Billy Wroblewski, (516) 878-0737

East Coast Barn Stormers, MD #1 Old Oxford Rd., Chester, NY 10918; Michael or Lou, (914) 469-5883

Electric City Speedway, 955 State St., Schenectady, NY 12307; Jim Delyser, (513) 372-7920

Enjoyable Hobbies and Raceway, 260 Ronkonkoma Ave.,Lake Ronkonkoma, NY 11779; (510) 588-6994

Foothills R/C Racing Club, RD 1, Box 1156, Maryland, NY 12116;Steve Valentine, (607) 433-1860 or 432-7508

Gamlen's R/C Motor Speedway, 8453 Rt. 11, P.O. Box 1430, Cicero, NY 13039; Mike Woods, (315) 699-2991

GP Racing, 6785 Martin St., Rome, NY 13440; Greg Philley, (315) 336-5140

HobbyTown USA, 629 Plank Rd., Clifton Park, NY 12065; Larry Burwell, (518) 383-1215

Jerry's Raceway, 111 S. Applegate Rd., Ithaca, NY 14850; Jerry and Lori Achilles, (607) 277-0940

Lakeside Raceway & Hobbies, 712 Willow Ave., Ithaca, NY 14850; (607) 272-0248

Latest Hobbies & Raceway, 781 Rt. 25A, Rocky Point, NY 11778; Joe Jolin, (516) 929-8844, fax, (516) 929-5002

LI 1/4-Scale Racers, 63 Horton Dr., Huntington Station, NY 11746; (516) 351-5384

Maspeth Raceway, Rust St. & 57 Rd., Maspeth, NY 11378; Walter, (718) 897-7921

Mattituck Hobbies & R/C Raceway, 7335 Main Rd., Mattituck, NY 11952; Wally, (516) 298-2020

Norwood Hobbies Raceway, 2-4 S. Main St., Norwood, NY 13668; Tom Jarvis, (315) 353-6621

Performance Hobbies Raceway, 205 North Ave., Webster, NY 14580; Anthony Cenzi, (716) 621-1274

Performance Plus R/C Speedway, The Hobby House, 1141/2 Jones & Gifford Ave., Jamestown, NY 14701; (716) 488-1772

Port City R/C Club, Fort Ontario Complex, Oswego, NY 13126; Jack LaTulip, (315) 342-3545

R/C Competition Corner, K-Mart Plaza, Mattydale, NY 13211; (315) 455-8718

R/C Hobbies, Rt. 49, Box 138, Constantia, NY 13044; Roy Catholdi, (315) 623-9536

R/C World Hobby Center, 69-57 Juniper Blvd. S., Middle Village, NY 11379; (718) 326-0002

R&S Hobbies, 356 Macedon Ct. Rd., Fairport, NY 14502; (716) 425-3722

Race O Rama, 44 Sharon Ave., Plattsburgh, NY 12901; James Varno, (518) 562-5442 or 643-2678

Raceworld R/C, Budd Rd., Phillipsport, NY; Joe Columbo Jr., (914) 754-7664

Rampage R/C, 27 Fuller Ln., Hyde Park, NY; Brian Walke, (914) 229-2456

Ransomville R/C Raceway, 2576 Academy St., Ransomville, NY 14131; Irene Preisch, (716) 791-8310

Rock River Model Hobbies, RD 2, Box 297, Rock River Rd., Interlaken, NY 14847; Carl Schmidt, (607) 532-9489

Schoharie Co. R/C Car Club, P.O. Box 126, Cobleskill, NY 12043; (518) 234-4600

Seneca R/C, 2339 Yerkes Rd., Romulus, NY 14541; (315) 789-8343

Skaneateles Raceway & Hobby, P.O. Box 102, Rt. 20, W. Genesee St., Skaneateles, NY 13152; (315) 685-8077

Small Torque Racers of Long Island, 24 Horton Dr., Huntington Station, NY 11746; George Franz, (516) 271-1119

South Shore Hobby & Raceway, 311 W. Roe Blvd., Patchogue, NY 11772; Don Hauck, (516) 758-5567

Southern Tier Raceway & Hobbies, 88 Paige St., Owego, NY 13827; Chet or Anita Harding, (607) 687-5395

Team Earthquake, The Hobby House, 1141/2 Gones & Gifford, Jamestown, NY 14701; (716) 488-1772

Transit Speedway & Hobbies, 5319 Transit Rd., Depew, NY 14043; (716) 684-7368

Ulsten County Speedway, P.O. Box 71, New Paltz, NY 12561; Joe Colombo Jr., (914) 754-7664

Walt's Hobby, 2 Dwight Park Dr., Syracuse, NY 13209; (315) 453-2291

Western New York R/C Speedway, 58 Spring St., Cuba, NY 14727; Jason Congdon, (716) 968-3586

Whitestone Off-Road Raceway, 149-50 15th Rd., Whitestone, NY 11357; Whitestone Hobbies, (718) 767-6767

NORTH CAROLINA

B-n-B R/C Raceway, 7805 S. Airazona Dr., Raleigh, NC 27604; Craig Barber, (919) 878-8407

Badin Shore Raceway, 1730 Jackson Lake Rd., High Point, NC 27263; Jimmy or Tim Martin, (919) 431-9258

Big Kids Little Toys, 407-B Pomona Dr., Greensboro, NC 27407; Joe Stewart, (919) 299-3355

C&H Raceway, 1400 N. Cannon Blvd., Kannapolis, NC 28083; Camera & Hobby Shop, (704) 933-5321

Cape Fear Speedway, 207 Harley Rd., Wilmington, NC 28401; Bob Justice, (919) 762-1184

Carolina R/C Drag Assoc., 907-C Warsaw Rd., Clinton, NC 28328; (919) 592-9489

Carolina Hobbies R/C Raceway, Route 1, Box 158, Taylorsville, NC 28681; Kim & Roseanne Kulawik, (704) 495-4040

Clapp's R/C Motor Speedway, Rt. 4, Box 300A, Siler City, NC 27344; Al Clapp, (919) 663-3198

Clinton R/C Raceway, 907-C Warsaw Rd., Clinton, NC 28328; Corbitt Marshburn (919) 592-9489

Dan's R/C Raceway, Rt. 4, Box 392A, Conover, NC 28613; Danny Dellinger, (704) 256-8963

Granite City R/C Raceway, 192-1 N. Main St., Mt. Airy, NC 27030; (919) 786-1466

Hi-Performance Hobbies & R/C Raceway, P.O. Box 320, Earl, NC 28038; Derrell Hollifield, Steve Bliss, (704) 482-4391

Hobbies, Etc., 5540 Atlantic Springs, Raleigh, NC 27604; Don Asplen, (919) 790-1444

Hobby Park, W. Clemmonsville Rd., Winston-Salem, NC 27103; Dick Butler, Parks & Recreation, (919) 727-2063

The Hobby Speedway, Hwy. 25, P.O. Box 279, Naples, NC 28760; Jerry or Kelda Bowers, (704) 684-9814

Joe's Hobby Shop & Raceway, Rt. 2, Box 682-B, Bessemer City, NC 28016; (704) 435-2912

Jacksonville International Raceway, E. Thompson St, Jacksonville, NC 28540; Penny, (919) 346-1522

K/C Hobby Raceway, 10517-N N. Main St., Archdale, NC 27263; Kirby Cranford, (919) 434-3482

Lucky 7 Hobbies, 1757 Hwy. 15, Creedmoor, NC 27522; Eddie Markham, (919) 528-2054

Mega Track of the Triad, 5540-105 Atlantic Springs Rd., Raleigh, NC 27604; Don Asplen, (919) 790-1444

Motorlead R/C Raceway, 125 Park St., Canton, NC 28716; (704) 648-7911

Mountain R/C Raceway, Hwy. 107N, P.O. Box 67, Glenville, NC 28736; (704) 743-3709

Outlaws Fastrac Hobbies Raceway, 1013 Old Hendersonville Hwy., Brevard, NC 28712; Jeff Laws, (704) 885-RACE (7223)

PC Hobbies, 143 Industrial Dr., King, NC 27021; Mike Ingles, (919) 983-2514

Reedy Creek Raceway, Rt. 14, Box 946, Conard Sowers Rd., Lexington, NC 27292; (704) 731-4022

Rosewood Speedway, Rt. 5, Box 853, Goldsboro, NC 27530; Glenn Elam, (919) 731-4734

S&B Speedway & Hobbies, Rt. 1, Box 311A, Farmville, NC 27828; Ricky Strickland or Van Bibbs, (919) 753-4422 or 749-1468

Sandhills Raceway Inc., US #1 South, Aberdeen, NC 28315; (919) 944-7414

Smiley Face Raceway, 120 W. Center St., Mebane, NC 27302; (919) 563-3822

Speed Performance, 4121 Lower Moncurd Rd., Sanford, NC 27330; Howard Everett, (919) 774-3843

TLC R/C Raceway, Rt. 6, Box 321-A, Hwy. 601, Mocksville, NC 27028; (704) 492-7569

TNT R/C Raceway, 707 N. Salisbury Ave., Salisbury, NC 28159; Larry Martin, (704) 633-0647

Two Toms Hobbies, 155 Boone Square St., Hillsborough, NC 27278; Tom York, (919) 732-6221

Wilkes Hobby Thundervalley Raceway, Rt. 1, Box 350-B, Wilkesboro, NC 28624; (919) 973-3734

Winston R/C Drag Series/Hobby Park Dragway, W. Clemonsville Rd., Winston-Salem, NC; Jack Wright, (919) 983-9416

NORTH DAKOTA

Crystal Springs Off-Road, 1200 53 Ave. SW, Minot, ND 58701; (701) 852-9590

Hacienda Hills Speedway, 20 Hacienda Hills, Minot, ND 58701; Kenny Duchscherer, (701) 839-4419

Northern Mini Racers, P.O. Box 415, Minot, ND 58702; Patrick McWethy, (701) 839-8868

OHIO

Aerotech Raceway, 409 Applegrove Rd., North Canton, OH 44720; (216) 499-1300

Alcraft's R/C Raceway, 1370 Custer-Orangeville Rd., Brookfield, OH 44403; (216) 448-1573

Alternative Racing Association, Canton R/C Speedway, 2600 17th St., East Canton, OH 44730; Neal Everhart, (216) 484-2587

Bryan Thunderdrome, Townline Rd., Bryan, OH 43506; Jeff Lehmann, (419) 636-9100

Buckeye Pulling Tracks, State Rt. 68, Xenia, OH 45385; Mark Hartings, (513) 376-8334

C/R Hobbies Top Race Track, 323 Center St., Ashtabula, OH 44004; Virginia Gagat, (216) 992-3833

Classic Hobbies & Raceway, 2845 W. Waterloo Rd., Akron, OH 44312; (216) 628-3222

D&J R/C Raceway, 801 W. Market St., Orrville, OH 44667; Don Yoder or Mark Nussbaum, (216) 682-4266

D&S Hobbies Raceway, 7701 Crile Rd., Concord, OH 44077; (216) 354-2112

FFA Speedway, 1001 Old Columbus Rd., Wooster, OH 44676; Roger Franks, (216) 264-1848

Flag City Raceway, 721 Rockwell Ave. (track address: 3772 C.R. 18), Findlay, OH 45840; Ruth Hubbard, (419) 422-5589

Golden Bear Hobbies, 154 N. Millbourne Rd., Orrville, OH 44667; Bob Rodi, (216) 683-1250

Hi Tech Hobbies II, 116 S. Taylor St., Loveland, OH 45140; Rick Lewis or Richard Kosar, (513) 683-8900

Hobby Mania Raceway, 6597 Route 224, Lowellville, OH 44436; (216) 536-8282

Innovative Hobbies/Lakeside Speedway, 3427 Manchester Rd., Akron, OH 44319; (216) 645-1333

JB Hobby & Raceway, 8760 St. Rt. 201, Tipp City, OH 45371; Bob Curtis, (513) 845-8222

KAR R/C Raceway, 14511 Seacrist, Salem, OH 44460; Reid Tarves, (216) 537-4039

Kent Hobby, 832 N. Mantua St., Kent, OH 44240; Bob Sabo, (216) 673-0422

Lewisburg R/C Raceway, 395 US Rt. 40E, Lewisburg, OH 45338; Gene Butler, (513) 678-9201

Medina City R/C Raceway, 3414 Remsen Rd., Medina, OH 44256; Eric Pesto, (216) 723-0255

Midway Racetrack, 2601 Ashland Rd., Mansfield, OH 44905; Greg Jones, (419) 589-4200

Parma Speedway, 5729 Ridge Rd., Parma, OH 44129; Sam Belsito, (216) 845-3706

Paulding R/C Speedway, 103 N. Main, Paulding, OH 45879; Virgil Simindinger, (419) 238-0633

The Racer's Choice R/C Hobbies & Raceway, 1298 US Rt. 42, Mason, OH 45040; (513) 398-5539

RBI R/C Speedway, 110 Springdale Ave., Wintersville, OH 43952; Frank Luckino, (614) 264-9101

Right Choice Hobbies, 7760 Garrison Ave., Cincinnati, OH 45247; (513) 353-3343

Rolling Thunder, 1945 North Hubbard Rd., North Madison, OH 44057; John Hoylman, (216) 428-4406

Sleepy Hollow Raceway Park, 11189 Spear Rd., Concord, OH 44077; Gary Waldhelm, (216) 944-5898

Steel Valley Hobbies & Raceway, 157 North Fourth St., Steubenville, OH 43952; Jim Maxwell, (614) 282-3003

Strongsville Speedway, 13315 Prospect, Strongsville, OH 44136; (216) 572-0430

Way Out Hobbies, 5583 Centerpoint Rd., Georgetown, OH 45121; (513) 375-4984

Woodlane Raceway, 2300 E. Dorothy Lane, Dayton, OH 45420; Jeff Simpson, (513) 298-1166

Y-City Hobby & Speedway, 120 S. 6th St., Zanesville, OH 43701; Kevin McKenna, (614) 455-3025

OKLAHOMA

Ace Raceway, 2608-768 Villa Prom. (Shepherd Mall), Oklahoma City, OK 73107; Mike McLish, (405) 947-5937

Adams Creek R/C Speedway, 5207 S. 194th E. Ave., Broken Arrow, OK 74014; John Beighle, (918) 355-1416

Coweta Hobby & Speedway, 310 S. Broadway, Coweta, OK 74429; Derlald Seabolt, (918) 486-3948

Matt's Flying "M" R/C Raceway, 111 W. 4th, Shamrock, OK 74068; Matt Sontag, (918) 352-3212

Off-Road Car Assoc. of Tulsa, 9720 Swan Dr., Broken Arrow, OK 74014; George Gooch, (918) 486-4528

R.C.A.R., 12327 East 1st St., Tulsa, OK 74128; Dave Cole, 663-8998

RCRC, 400 S. Vermont, Suite 104, Oklahoma City, OK 73108; Rick or Steve, (405) 947-7223

Sundown Raceway, 526 Virginia Ave., Ponca City, OK 74601; Ryan Trant, (405) 765-2832

Wild Country Speedway, 127 South Main, Porter, OK, 74454; Charles McCollough, (918) 685-0372 or 687-1686

OREGON

Catch Some Air, 44855 SE Wildcat Mountain Dr.,Sandy, OR 97055; Erik, (503) 668-8334

Cathie's R.C. World, 443 So. Calapooia, Sutherlin, OR 97479; Wes/Cathie Buzzard, (503) 459-2746

Competition Racing Assoc., 17941 NE Glisan, Portland, OR 97230; Mark Taylor, (503) 257-0796

Fast Track Recreations, 18023 SE Addie Rd., Milwaukie, OR 97267; Dale Nielson, (503) 659-7661

The Finish Line R/C Raceway, 560 W. 'D' St., Apt. 6, Creswell, OR 97426; Rod Carothers, (503) 895-4395

Hobby Center, 1740 Geary St. SE, Albany, OR 97321; Ron Juhnke, (503) 928-5255

Mt. Bachelor Radio Raceways, 225 Century Dr., Bend, OR 97701; Rex Baldwin, (503) 389-6160

North Lawrence Raceway, 36 N. Lawrence, Eugene, OR 97401; Gary Hill, (503) 484-9857

R/C Plus Hobbies Raceway, 2029 25th St. SE, Salem, OR 97302-1130; Ron Smith, (503) 364-9188

R/C Speed Center, 2810 N. Pacific Hwy., Medford, OR 97501; (503) 779-8298

Yamhill County R/C Car Club, 722 Morgan Ln., McMinnville, OR 97128; Larry Rucker, (503) 472-7234

PENNSYLVANIA

A-1 R/C Speedway, 15 S. Hanover St., Hummelstown, PA 17036; Clyde Felker, (717) 566-3335

Ansolan, 54 High St., Fairchance, PA 15436; Timothy Abraham, (412) 564-9956

B&B Raceway, 252 Geiger Rd., Philadelphia, PA 19115; Rod Smith, Doug or Dave Bruestle, (215) 686-6086

BJ's Hobbies & Raceway, 570 E. Camping Area Rd., Wellsville, PA 17365; Janet & Allen Wiley, (717) 292-3723; fax, (717) 292-3584

Brian's Raceway, 733 Flexer Ave., Allentown, PA 18103; (215) 435-1862

CEB Motors R/C Div., 5743 Molly Pitcher Hwy., Marion, PA 17235; Charlie Booze, (717) 375-4635

Clearfield R/C Car Club, P.O. Box 297, Clark Hill Rd., Hyde, PA 16843; Joe Welch (814) 765-3045

Cressona Mall Speedway, Rt. 61, Pottsville, PA 17901; (717) 385-3506

Curly's Hobby Shop, 4455 W. Ridge Rd., Hickory Plaza, Erie, PA 16506; (814) 835-1134

DARCAR, RD 1, Box 290, DuBois, PA 15801, (814) 375-0687

DC Ultra Oval, 13 York Rd.,Warminster, PA 18974, (215) 672-5200

Denwick R/C Hobbies & Raceway, 5601 Lincoln Way East, Fayetteville, PA 17222; Charles Gardenhour, (717) 352-8899

Dreamboat Hobbies, 2810 Pennsylvania Ave. W., Warren, PA 16365; Louie Dussia, (814) 723-8052

East St. Raceway & Art Center, 747 E. Railroad Ave., Verona, PA 15147; (412) 826-0602

East St. Raceway, 736 East Railroad Ave., Pittsburgh, PA 15147; Steve Maiolo, (412) 826-1324, (412) 826-0602

Henning Scale Models R/C Raceway, 128 S. Line St., Lansdale, PA 19446; Bill Henning, (215) 362-2442

High Tek Hobbies, 13250 Rt. 30; N. Huntingdon, PA 15642; Ken Brooks, (412) 864-5278

Hipkins Hobbies Raceway, 402 W. Avondale-New London, West Grove, PA 19390; Doug Hipkins, (215) 869-8585

Hobby America Raceway, 5 Fitzsimmons St., Duke Center, PA 16729; Dan or Mike Coast, (814) 966-3765

Hobby Heaven, 1845 Rt. 422 West, Indiana, PA 15701; Scott McAdoo, (412) 463-8010

Hobby House Raceway, Downingtown Marketplace, Downingtown, PA 19335; J.T. Nelson, (215) 269-1300

Hobby World Raceway, 172 Shillington Rd., Sinking Spring, PA 19608; Mike Wentzel, (215) 678-8760

JR Hobby Shop & Raceway, 1806 Nagle Rd., Erie, PA 16501; Ron Bradear, (814) 898-1816

Koontz's Home & Hobby Center, 1205 Hoover St., Pittsburgh, PA 15204; (412) 331-3866

Kranzel's R/C Raceway & Hobbies, 415-B Bosler Ave., Lemoyne, PA 17043;David or Stuart Kranzel, (717) 737-7223

L&R R/C Racing, 15 S. Main St., Red Lion, PA 17356; Larry & Randy Shoemaker, (717) 244-1108

Main Hobby Race Center, 501 E. Lackawanna Ave., Olyphant, PA 18447; Dave or Zig, (717) 489-4566

Marshall's R/C Raceway, RR 4, Box 640, Honesdale, PA 18431; Bill or Dot Marshall, (717) 729-7458

Modellbahn Ott Hobbies, 1145 E. Philadelphia Ave. (Rt. 73), Gilbertsville, PA 19525; (215) 367-5925

Mountain R/C Raceway, 918 S. Park Ave., Somerset, PA 15501; Bob Rhodes, (814) 445-4085

Track Directory

Mt. Laurel Speedway, 835-8 Hiester Lane, Reading, PA 19605; Joe Vaccaro, (215) 921-0176



New Garden Farms/The Mushroom Bowl, 812 W. Cypress St., Kennett Square, PA 19348; Joe, Bruce, or Drew, (610) 444-1850



Pinion Twisters, Green Lane & Mitchell, Bristol, PA 19007; Bob, (215) 945-0325, John, (215) 632-9744



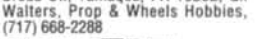
Pit Stop Hobbies, 262 W. Main St., Mount Joy, PA 17552; James F. Stovot Jr., (717) 653-6222



Pro Challenge Raceways, Wycombe Ave. (P.O. Box 536), Lansdowne, PA 19050; Bob Baldwin or Bob Paulauge, (215) 622-7651



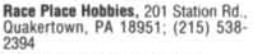
Prop & Wheels Raceway, 139 W. Broad St., Tamaqua, PA 18252; Gil Walters, Prop & Wheels Hobbies, (717) 668-2288



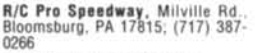
R&D Hobbies & Raceway, 5101-C Jonestown Rd., Harrisburg, PA 17112-2924; Craig Bishop, (717) 545-4984; fax (717) 545-5306



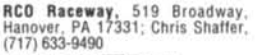
Race Place Hobbies, 201 Station Rd., Quakertown, PA 18951; (215) 538-2394



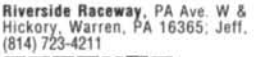
R/C Pro Speedway, Milville Rd., Bloomsburg, PA 17815; (717) 387-0266



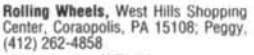
RCO Raceway, 519 Broadway, Hanover, PA 17331; Chris Shaffer, (717) 633-9490



Riverside Raceway, PA Ave. W & Hickory, Warren, PA 16365; Jeff, (814) 723-4211



Rolling Wheels, West Hills Shopping Center, Coraopolis, PA 15108; Peggy, (412) 262-4858



South Mountain R/C Speedway, 357 Furnace Rd., Wernersville, PA 19565; George Merkel, (215) 267-4736



Staub Bros. R/C Speedway, 31 Locust St., Gettysburg, PA 17325; Todd or Scott Staub, (717) 334-5445



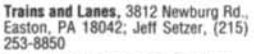
T&T Radio Controlled Racing, Randolph Rd., Great Bend, PA 18821; Jack, (607) 773-8603



TC's R/C's, 1537 Freeport Rd., Natrona Heights, PA 15065; Tom Coriale, (412) 226-8802



Trains and Lanes, 3812 Newburg Rd., Easton, PA 18042; Jeff Setzer, (215) 253-8850



Wagonhill Hobbies, 967 New Castle Rd., Rt. 422, Butler, PA 16001; Jeff Hyatt, (412) 865-9877

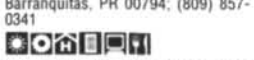


PUERTO RICO

Cachon Off-Road Track, Box 952, Barranquitas, PR 00794; (809) 857-0341



Cidra R/C Track, Carr 7787 Km 1.6, BoBeatriz Adentro,Cidra, PR;Humberto (Tito) Lizardi, (809) 739-1572



Cachon Off-Road Track, Box 952, Barranquitas, PR 00794; (809) 857-0341



RHODE ISLAND

East Bay Hobbies, 629 Metacom Ave., Bristol, RI 02809; (401) 254-0778



R/C Hobbies, 47 Sandybottom Rd., Coventry, RI 02816; (401) 823-4335



Roller Kingdom, Diamond Hill, Rte. 114, Woonsocket, RI 02895; (508) 520-3262



Tri-State R/C Raceway, 205 Hallene Rd., Warwick, RI 02886; Raymond Dean, (401) 738-4908



SOUTH CAROLINA

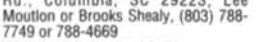
Bandit's Performance R/C Hobbies, 2037 S. Main St., Darlington, SC 29532; Bryan Howle Jr., (803) 393-3333



Berea R/C Speedway, 707 Sulphur Springs Rd., Greenville, SC 29611; (803) 246-4702



Capitol City Raceway, 1955 Legrand Rd., Columbia, SC 29223; Lee Moutlon or Brooks Shealy, (803) 788-7749 or 788-4669



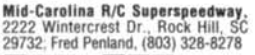
Coastal R/C Speedway, 8553 Hwy. 544, Myrtle Beach, SC 29577; Wendel Smith, (803) 236-9309



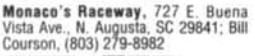
Inland R/C Speedway, 61 Newfound Lane, Myrtle Beach, SC 29577; James Watten, (803) 293-1753



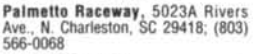
Mid-Carolina R/C Superspeedway, 2222 Wintercrest Dr., Rock Hill, SC 29732; Fred Penland, (803) 328-8278



Monaco's Raceway, 727 E. Buena Vista Ave., N. Augusta, SC 29841; Bill Courson, (803) 279-8982



Palmetto Raceway, 5023A Rivers Ave., N. Charleston, SC 29418; (803) 566-0068



R/C Speed Shop & Raceway, 2122 Platt Springs Rd., W. Columbia, SC 29169; Eric Prevost, (803) 791-4715



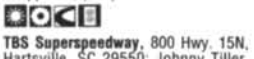
Sidewinder's R/C Raceway Park, 1601-B West Enterprise St., North Charleston, SC 29406; Jimmy Closson, (803) 744-7441



Simpsonville International R/C Speedway, 3009 Bethel Rd., Simpsonville, SC 29681; Larry Chappelear, (803) 297-3572

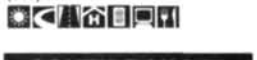


TBS Superspeedway, 800 Hwy. 15N, Hartsville, SC 29550; Johnny Tiller, (803) 332-7117



SOUTH DAKOTA

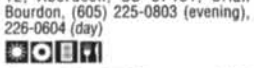
CSF Speedway, Central States Fairgrounds, Creative Arts Bldg., 800 San Francisco St., Rapid City, SD 57702; Scoop Laskowski, (605) 342-5292



Dakota Off-Road Racers, 2989 W. Br. Co. 12, Aberdeen, SD 57401; (605) 226-0604



1/8-Scale Off-Road, 2989 W. Br. Co. 12, Aberdeen, SD 57401; Brian Bourdon, (605) 225-0803 (evening), 226-0604 (day)



Flags of Fun R/C Raceway, 2802 Eglin St., Rapid City, SD 57702; Rex Conrad or Scoop Caskowski, (605) 341-2186

TENNESSEE

Action Hobby Shop, 3723 S. Mendenhall, Memphis, TN 38115; Brian Stricklin or Justin Austein, (901) 365-2620

AIR Raceway, ByPass Hobbies, 1114 Hwy. 11 N., Athens, TN 37303; Bill Burris, (615) 744-8999

Butturini's Best Raceway, 4828 George Williams, Knoxville, TN 37922; Steve Butturini, (615) 531-0325

Crash-n-Burn R/C Raceway, 7030 Maynardville Pike, Knoxville, TN 37918; Gary Daniel, (615) 922-8722

Competition Park, Rt. 10, Box 268, Crossville, TN 38555; Terry or Yvette Bowen, (615) 277-5048

Cumberland Valley Raceway, P.O. Box 233, Ashland City, TN 30715; Jamie Pate, (615) 792-4371, ext. 1195

D&M's Downtown Raceway, 2703 US Hwy. 411S, Maryville, TN 37303; (615) 681-8919

Estill Springs Raceway, P.O. Box 187, Hwy. 41-A, Estill Springs, TN 37330; David or Wendy Panter, (615) 649-5113

Hobby World Raceway, 185 S. Jefferson, Cookeville, TN 38501; Scott Large or Scott Watson, (615) 528-2808

Lail Speedway, 812 Wells Rd., Maryville, TN 37801; Jack or Chris, (615) 983-9207

Mad Dog Motorsports, 707 Joy St. (Rt. 3, Box 247), Paris, TN 38242; Dan Mobley or Mike Andres, (901) 642-7794 or 644-1523

MSA R/C Racing, Rt. 12 Box 489 B, Crossville, TN 38555; D.R. Findley, (615) 456-0027

O.R.R.C.C.C., 322 Bus Terminal Rd., Oak Ridge, TN 37830; Bobby Green or Les Phillips, (615) 483-8805, 482-2406

Panther Traxcc, 7030 Maynardville Hwy., Knoxville, TN 37918; Gary Daniel, (615) 922-8722

Raceplace, 215 Lynn Garden Dr., Kingsport, TN 37660; Randy Horton, (615) 378-3330

Rivergate Hobby Center, 700A Two Mile Pkwy., Goodlettsville, TN 37072; David Hitt, (615) 859-3455

RMD Raceway, 175 Seavers Rd., Jackson TN 38301; Travis Robertson, (901) 424-0283

TNT Pro Hobbies, 5529 Pleasant View #2, Memphis, TN 38134; Tony Howell, (901) 377-0013

Tri-County Radio Control Club, 919 Little Dogwood, 1312 Kingston Hwy., Kingston, TN 37763; Dwaine Romine, Kyle Romine, (615) 376-2330, 376-9955

Tuckasee Off-Road Raceway, 1004 Lafayette Rd., Clarksville, TN 37042; Denny Hayward, (615) 645-2635

TEXAS

AA Raceway, 1617 Toomey Rd., Austin, TX 78704; (512) 474-8277

Anchored Acres Raceway, 1101 Sheppard Rd., Burkburnett, TX 76354; Bob & Patricia Veal, (817) 569-4707

Austin R/C Center, 9702 Gray Blvd., Austin, TX 78758; Caton Cobb, (512) 832-8144

B&C Speedway, 201 Enterprise Row, #101, Conroe, TX 77301; Bobby Hillin, (409) 760-1986

Budget Raceway, RR 1, Box 400 I-35, Bruceville, TX 76630; (814) 859-5296

Checkered Raceway, 7121 Peremeter Park, Suite 214, Houston, TX 77099; Rod Ward, (713) 849-3054

Dove R/C Speedway, 400 South I-35, Bruceville, TX 76663; Curtis A. Rowe, (817) 757-1150

Eastex Raceway, 45000 Hwy. 59 N., New Caney, TX 77357; Heinz Falke, (713) 399-1527

Hal's R/C Raceway, 1440 Bessember, El Paso, TX 79936; (915) 591-2213

Heart o' Texas Hobbies & Raceway, 309 W. Hwy. 190, Copperas Cove, TX 76522; Larry Gholson, (817) 547-7505

Indy R/C World, 220 Mesquite Village, Mesquite, TX 75150; (214) 686-7744

J&K Speedway, 201 Enterprise Row, Suite 101, Conroe, TX 77301; J&K Hobbies, (409) 760-1986

Outlaw Speedway, Rt. 5, Box 173-3R, Lubbock, TX 79407; Derrell Butcher, (806) 885-4406

R/C Hobbies Raceway, 8500 Dyer, #36 Sunrise Centre, El Paso, TX 79904; Tim Minteer, (915) 751-1864

R/C Pro Shop, 12207 West County Road #129, Odessa, TX 79765

R/C Raceplace, 3546-A N. Main, Cleburne, TX 76031; Bruce Myers or Linda Achorn, (817) 558-2422

Randy's Hurricane Speedway, 9600-B Old Katy Rd., Houston, TX 77055; Randy Menchew, (713) 464-8020

Rebel Hobbies & Raceways, 11925 Jones Maltsberger, San Antonio, TX 78216; George Norris, (210) 496-2396; fax, (210) 496-3294

Rivercity Speedway, 11731 Wetmore, San Antonio, TX 78247; Ralph Hernandez, (210) 359-6870; Joe Toledo, (210) 341-5652

Ron's R/C Hobbies & Raceway, 2551 Lombardy, Dallas, TX 75220; Ron Salsini, (214) 357-3453

Southside R/C Raceway, 4409 FM2351, Friendswood, TX 77546; Roy Baxter, (713) 992-3541

Spring Creek R/C, 45 Fisherman's Rd., San Angelo, TX 76904; (915) 944-3850

Star/Car Raceway, 5802 Patton St., Corpus Christi, TX 78415; Mike Hellums, (512) 289-0066; Race Hotline, (512) 881-6105.

Star R/C Hobbies, 803 Garcia St., Port Isabel, So. Padre Island, TX 78578; Fred Carr, (512) 943-7546

T&T Eagle, 161 W. Spring Creek Pkwy., #601, Plano, TX 75023; Tony Welborn, (214) 517-0562

Texas Speedway, 6707 Chimney Rock, Houston, TX 77029; I&I Hobby Center, (713) 661-7137

Texas State Raceway, 3703 Seymour Rd., Wichita Falls, TX 76309; Chip Warman, (817) 692-2065

TK's R/C Park, 2921 Old Claude Hwy., Amarillo, TX 79101; (806) 622-0017

Wes Hobby, 980 S. 4th St., Beaumont, TX 77701; Edmond Richards, (409) 839-4929

Wild Bill's, 535 E. Shady Grove, Irving, TX 75060; Lynn Morgan or Jerry Williams, (214) 438-9224

UTAH

Hansen Intermountain R/C Raceway, 8481 W. 2700 S., Magna, UT 84044; Kevin Hansen, (801) 250-8303

JD's Intermountain R/C Raceway, 1500 E. 1748 S., Vernal, UT 84078; John or Dora Frankovich, (801) 789-3930 or 789-8337

Power Hobbies & Raceway, 135 No. 900 East Suite 7, St. George, UT 84770; April Nutley, (801) 628-8747

Vision Hobby Raceway, 352B N. State St., Orem, UT 84057; Vision Hobby, (801) 226-6226

WOR (Wasatch Off-Road Raceway), 3170 Brinker Ave., Ogden, UT 84401; Ultimate Hobbies, (801) 733-0933

VERMONT

Barre Town R/C Club, Wall St. Complex, S. Main St., Rt. 14, Barre, VT 05641; Daniel Guyette Sr., (802) 229-0639

Green Mountain Superspeedway & Hobbies, Elm St., Winooski, VT 05404; Charles Barsalow, (802) 893-2660

Hard Rock Raceway, Astrachan Dr., Bennington, VT 05201; Darren Ricchi, (802) 447-2656

Mike's Hobbies & Raceway, 162 N. Main St., Rutland, VT 05701; Stephen Rachlis, (802) 775-0059

Riverside R/C Speedway, Boyz R/C Hobbies, 700 Elm St., Winooski, VT 05404; Charles Barsalow, (802) 893-2660 or 893-2332

VIRGINIA

A-1 Raceways, 940 Radford Rd., Christiansburg, VA 24073; Kay or Charles Franks, (705) 381-9731 or 382-1173

Bob's Hobbies & Raceway, 910-J Brandy Creek Dr., Mechanicsville, VA 23111; Bob Wagner, (804) 746-2758

Cooper's R/C Raceway, Rt. 4, Box 122B, Chatham, VA 24531; (804) 724-4182

Craftech Challenge, Naval Base D-4, Piesey St., Norfolk, VA 23455; Bernie Duffy, (804) 444-3846

Crossroads Hobbies R/C Raceway, 1104 W. Main St., Salem, VA 24153; Ronnie Black, (703) 387-3414

Fairystone R/C Speedway, Rt. 4, Box 918, SR635, Stuart, VA 24171; Pat Moon Jr., (703) 930-3984

Front Royal R/C Racing Association, P.O. Box 1252, Front Royal, VA 22630; Pete Pomeroy, (703) 636-6149

H&S R/C Raceway, 565 Electric Rd., Salem, VA 24153; Henry Dowd or Stacy LaPrade, (703) 343-4012

Hobby Hangar Speedway, 4433A Brookfield Corp. Dr., Chantilly, VA 22021; Kwang Ko, (703) 631-8820

Hobby Shack and Track, Route 2, Box 184, St. Stephens CH, VA 23148; John or Laura Holder, (804)769-1311

KC's Radio Control & Repair, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596

Lane's End Raceway, P.O. Box 153, Bridgewater, VA 22812; Tony Strother, (703) 828-6655 or 3471

Mid Atlantic Raceway, 89 E. Elizabeth St., Harrisburg, VA 22801; (703) 433-3952

NSWC MWR R/C Track, C1243C Dahlgren, VA 22448; Doris Copen, (703) 663-1730

SHAMROC, P.O. Box 3739; Winchester, VA 22604; Glenn Bland, (703) 888-3927

Sterling Truck & Auto Racers, 20921 Davenport Dr., Sterling, VA 22170; Ron Beckman, (703) 444-0333

The Tiltyard, Rt. 1, Box 235A, Dayton, VA 22801; Homer W. Allman Jr., (703) 828-3476 or 828-6655

Timberlake Hobbies, 1400 Atlantic Ave. #201, Virginia Beach, VA 23451; Doris Cruea, (804) 491-8016

Trackside Hobbies, 1314 E. Pembroke Ave., Hampton, VA 23663; Rick Cardwell, (804) 723-4107

Trainland R/C Club, 5661 Shoulders Hill Rd., Suffolk, VA 23435; Frank Stevens, (804) 483-2331

Winners Circle, 3236 W. Clay St., Richmond, VA 23230; (804) 355-7076

WASHINGTON

Alfie's, 108 South K St., Aberdeen, WA 98520; (206) 533-6638

Arlington Heights Speedway, 13629 228th St. NE, Arlington, WA 98223; Shawn Bussert, (206) 435-3442

Firgrove TNT Raceway, 10611 136th E., Puyallup, WA 98374; Walt Hale, (206) 845-7675

Four Season R/C Racing, 2941 Sleater Kinney Rd. NE, Olympia, WA 98506; Gary & Sharon Brown, (206) 491-2430

Hank Perry Race Complex, Sullivan Rd., WA 99213; (509) 927-1879

L&L R/C Raceway, 15818 SE, 287th, Kent, WA 98042; Eric Lake or Bob Lewis, (206) 639-1241 or 631-1664

NORA Performance R/C, P.O. Box 955 (1673 Cedardale Rd.), Mt. Vernon, WA 98273; (206) 755-9464

Raceway Hobbies, 188 Sunset Ave. S., Edmonds, WA 98020; Dave or Ron Steen, (206) 774-3285

Schmidt's Auto Parts, 10305 Old Hwy. 99, Marysville, WA 98271; Jon Failla, (206) 653-8838

Spokane Indoor Raceway, E. 6422 2nd Ave., Spokane, WA 99212; Mike Gjendem, (509) 534-RACE

Tacoma R/C Raceway Hobbies, 6305 6th Ave., Tacoma, WA 98406;Nell Bade, (206) 565-1935

Tearor Raceway, 8012 S. Tacoma Way, Tacoma, WA 98499; Dave Kleinman, (206) 584-8659

WEST VIRGINIA

Burr-Fab Raceway, 90 Davis St., West Union, WV, 26456; Mark Travis, (304) 873-2487

D.W. Reed's, 142 West Main, Bridgeport, WV, 26330; David Reed, (304) 842-2742

Fairmont R/C Raceway, 430 Fairmont Ave., Fairmont, WV 26554; Ed Kirby, (304) 363-5509

Fulton's R/C Raceway, 2646 Chapline St., Wheeling, WV 26003; James Fulton, (304) 233-5355

R/C Race Place, Rt. 10, Box 351, Morgantown, WV 26505; (304) 292-0811

R/C Speed, Rt. 1, Box 363, Ronceverte, WV 24970; Joe, (304) 647-4162

WISCONSIN

ABC R/C, 1441 B East Main St., Waukesha, WI 53186; Dick, (414) 542-1245

Antigo Hobby, 311 Superior St., Suite 7, Antigo, WI 54409; (715) 623-7655

Arena Park Raceway, Kenosha County Parks, 7727 60th Ave., Kenosha, WI 53142; David Delabio, (414) 657-6371

Fox Valley Off-Road Racing Club, R1, Mayflower Rd., Hortonville, WI 54944; (414) 739-9211

Frog's R/C Raceway, Rt. 1, Phillips, WI 54555; (715) 339-2314 or 339-2958

Gary's Hobby Center, 3701 Durand Ave., Racine, WI 53403; Ron, (414) 554-8884 or 1-800-894-6229

Grant County Speedway, 2125 Oak, Hazel Green, WI 53811; Brad Birkette, (608) 854-2246

Hobby Headquarters, 224 North Franklin St., Port Washington, WI 53074; Jesse or Jenny, (414) 284-8850

Hobbytown Speedway, 4231 8th St. S., Wisconsin Rapids, WI 54494; (715) 421-1222

JJ's Dirt Heaven, 6028 County K, Champion, WI 54229; (414) 866-9096

Maniac Motors Raceway, 244 Rt. 1 A1 Rt. H, Kendall, WI 54638; (608) 462-8935

MARCCA Raceways, 1810 S. Park St., Madison, WI 53713; Jeff Gundlach, (608) 273-0519

Midwest Tri-Clone, 144 N. Main St., West Bend, WI 53095; (414) 334-0487

Mitch's Finish Line R/C Inc., 786 Morris Ave., Green Bay, WI 54304; (414) 497-5057

Muskyland R/C Raceway, Rt. 10, Box 269, Hayward, WI 54843; Jim Ahrens, (715) 634-2109

Pacific R/C Club, W7990 Hwy. P, Pardeeville, WI 53954; Rhys Brenner, (608) 742-7100

R/C Hobby Off-Road Track, Lewison Lane, Viroqua, WI 54665; Dan and Diane Sawvell, (608) 637-8221

R/C Raceway, 2239 Cty. Rd. E., Baldwin, WI 54002; Lance Van Damme, (715) 684-2690

R/C Raceways & Hobbies, 181 W. Marquette Ave., Oak Creek, WI 53154; Ralph & Cathy Augustino, (414) 764-9701

Radio Mania, 129 Harrison St., North Prairie, WI 53153; Bill Bowes, (414) 392-9515

Richland Center R/C Off-Road Racing Club, Fairground Rd., Richland Center, WI 53581; Rick & Cheryl Stussy, (608) 647-7313

S.C.A.R.C.E. Raceways, 1303 W. Wisconsin St., Portage, WI 53901; Cory Catlin, (608) 742-3799

Sparta R/C Raceway, Golf Course Rd., Sparta, WI 54656; Eric Johnson, (608) 269-5861 or 269-6613

Stoltz Raceways, 548 Summit Dr., West Bend, WI 53095; (414) 338-6097

Trackside Raceway, 4405 W. Bradley, Milwaukee, WI 53223; Joel Gish, (414) 355-1910

West Bend Hobbies, 144 N. Main St., West Bend, WI 53040; (414) 334-0487

WYOMING

Collectable Creations Off-Road Oval Track, 1790 Dell Range Blvd., Cheyenne, WY 82009; Phil Severson, (307) 632-2156

AUSTRALIA

Wodonga R/C Car Club, 11 Murphy St., Wodonga, VIC 3690; Ron Langman, 011-6160-247-128

Aubry R/C Car Club, Aubry Showgrounds, Aubry, NSW 2640; Ron Langman, 060-247-128

BELGIUM

Cartroubles Indoor Buggy Track, jan Moonsstraat 52-56, 2160 Wommelgem, Belgium; Guy Ermes,32-3-326-51-15; fax, 32-3-326-51-01

Model Racing Club Oudenaarde, Scheldekant, 9700 Oudenaarde, Belgium; A. Chanterie,32-55-31-36-48; fax, 32-55-30-19-12

BRAZIL

Brasilia R/C Motor Circuit, Estacionamento do Estadio Mane Guarrincha, Brasilia, DF 70000, Brazil; Alexandre (Alex), 55-061-273-7205

Hobby Center, SQS.210 Bl.H Apt. 204, Brasilia, DF-Brasil 70.273; 061-242-0488

Off Roaders, Av. Guillerme Dummont Villargs, 317, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931

Way of R/C Off-Road Cerrado, Rua Paraiba 1323, 1st floor, Belo Horizonte, Minas Gerais; Claudio T. Corrêa, (031) 227-6111, fax (031) 227-6869

CANADA

Action Wheelz, 462 Turcotte, Vanier, Quebec,G1M 1R6; Regent Tardif, (418) 527-5756.

Andy's R/C Raceway, Box 423, Lac La Biche, AB T0A 2C0; Andy Bryks, (403) 623-2951

Aprilia Track, 20 Parsons Ridge, Kanata, Ontario K2L 2N4; (613) 836-2577

ATN, 2000 Paul Hubert, Nicolet, Quebec J0G 1E0; Louis Durand, (819) 293-6097

Autodrome des Prairie, 935 Boul. St-Luc, St-Luc, Quebec J0J 2A0; (514) 348-0718

Cactus Speedway, Con. #3 Ruthven at Colastanti's, Ruthven, Ontario N8N 2W6; Lanny Fitzpatrick, (519) 735-3039; Wayne Telasco, (519) 966-0702

Circuit Pepsi, Centre de Location, 37 duRoi, Sorel, Quebec; (514) 746-8828

Circuit R/C Bonzai, 164 Cowie, Granby, Quebec J2G 3V3; (514) 372-3622

Circuit St-Denis Auto Téléguides, 292 DuLion, St-Denis sur Richelieu, Quebec, J0H 1K0; Francois Rivard, (514) 787-1127

Circuit Teleguide Ville Mercier, 1101 St. Jean Baptiste, Mercier, Quebec J6R 1C6; Norm Foster, (514) 699-4003

Club AVATT, 244, rue Hotel de Ville, Deauville, Quebec; Daniel Vanier, (819) 864-6262

Crash Course, Box 9, Site 8, RR #1, Spruce Grove, Alberta T7X 2T4; Tim Starrevied (403) 963-5795

CRCCC, Box 309, Clinton, Ontario NOM 1L0; Eric Russell (519) 482-9429

Dynamic Hobbies, 21 Concourse Gate, Unit 6, Nepean, Ontario K2E 7S4; Clark Freeman, (613) 225-9634

East Coast Model Center Raceway, 13 Glen Stewart Dr., Suite 1, Southport, Prince Edward Island. C1A 8X9; Gary Stephen, (902) 569-3262

East Wind Farm, R/C Corral, Perimeter Hwy., Plessis Rd. South, Springfield, Manitoba; Chito De Jesus, (204) 775-9180

Fast-Trax Speedway, RR 4, Trenton, Ontario; Russ McPeak, (613) 394-6411

The Glass Castle Off-Road, RR#7 Trans Canada Hwy., Duncan, B.C. V9L 6P4; Don Douthwright, (604) 746-6518

GRSCR, 9 Gauthier, St-de L'Achigan, Quebec J0K 3H0; (514) 588-4254

Hobbypro Raceways Ltd., 16020-132 Ave., Edmonton, Alberta T5V-1M1; Tony or Ian, (403) 455-RACE (7223)

Honda House Motor Speedway, 384 Richmond St., Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530

Interior R/C Raceway, 34-1605 Summit Dr., Kamloops, BC, V2E 2A5; Martin Vannieuwenhuizen, (604) 374-1268, (604) 374-8458

IROCC Off-Road, Hartland Rd., Victoria, B.C., Gary Allen, (604) 478-8004

Track Directory

Ivan's Playground, 2220 Dewdney Ave., Regina, Sask., S4R 1H3; Ivan or Conrad, (306) 757-8881

J-T International Raceway, 127 Milligan Lane, Napanee, Ontario K7R 8A1; N. O'Neill, (613) 354-0099

Kamloops Dirt Burners, 311-1780 Springview Pl., Kamloops, BC, V2E 1J4; Martin Vannieuwenhuizen, (604) 374-1268

Kiwanis Radio Control Club, 410 Spruce St., Timmins, Ontario P4N 4S7; Al Bouley, (705) 267-1569, fax, (705) 268-9129

Krazy Trak, 2412 Miller Ave., Saskatoon, Sask.; Brian & Bart Kendel, (306) 221-7344

M&M Hobbies Raceway, 430 McMurchy Ave.S., Unit1604, Brampton, Ontario L6Y2N4;Mike, (416) 452-8355

Mackay Track, 1025 W. 14th, North Vancouver, BC; Alan Walrond, (604) 684-8335

Maple Grove R/C Track, RR #3, Brockville, Ontario K6V 5T3; Ray Giroux, (613) 342-5549

Meaford Georgian Bay Raceway, Hwy. 26, West of Meaford, Meaford, Ontario N0H 1Y0; Greg Allan or Dave Shaw, (519) 538-1441

Mini-Circuit Ste. Rosalie, 3785 Blv. Laurier, Ste. Rosalie, Quebec J0H 1X0; Gilles O. Deslauriers, (514) 771-9190, 773-5500

MORRAC Raceway, 6449 Crowchild Tr. SW., Box 36060, Calgary, Alberta T3E 7C8; Gary Fliegel, (403) 254-1386

Niagra R/C Speedway, 1874 Hwy. 20, Thorold, Ontario; Steve Ingram, (416) 892-5548

Quintrax Speedway, Box 1034, Belleville, Ontario K8N 5B6; (613) 962-1414; fax: (613) 962-7306

Radical Raceway, 150 Bradwick Drive, Unit 25, Concord, Ontario L4K 1K8; Roland Glass, (416) 660-5238

R/C Sports World, 4305-101 St., Edmonton, Alberta; Lyndon Kendrick, (403) 434-1985

Rousillon Hobby Track, 177-D St-Jean Baptiste, Chateauquay, Quebec J6K 3B4; (514) 698-2151

RROL, Flite Craft Hobbies, 509 McGregor St., London, Ontario; Greg, (519) 642-7468 or Mark Hennion, (519) 474-2507

Seaway Valley R/C Raceway, RR 1, Iroquois, Ontario K0E 1K0; Orvill or Carol Smyth, (613) 652-4953

Thunder Alley, 1380 London Rd., Sarnia, Ontario N7S 1P8; Rob Smith, (519) 882-3361

Top Qualifier Race Club, McKay Park, North Vancouver, B.C.; Derrick Vandekraats, (604) 985-3948

Union Creek Speedway, 281 Henderson Highway, Winnipeg, Monitoba R2L 1M4; MRCAR c/o Kelvin Community Centre, (204) 667-9186

Universal R/C Speedway, Niagara St., Welland, Ontario; (416) 735-5051

Wayne's World, 1616 Brock St. S., Whitby, Ontario L1N 4M4; Wayne, (905) 430-4795

West Coast R/C Raceway, 190-7771 Alderbridge Way, Vancouver, B.C. V5C 3A3; Michael Ma or Kelly Ho, (604) 276-8779

WORRC, 861 Isack Dr., Windsor, Ontario N8S 3W6; Pete Adams, (519) 944-8519 or 974-3346

Woodstock Speedway, Queen St., Woodstock, NB; Woodstock Hobby, (506) 325-2067

COLOMBIA

Garoso Raceway, Avenida Libertadores con Diagonal Gran Colombia, Cucuta, Colombia; Gabriel Rodriguez, 975-751892

DENMARK

Holstebro R/C Buggy Club, Mozartsvej 7500 Holstebro, Denmark 2600; Michael Brusholt, 011-45-97-412-734

Rainbow Raceway, Eriksvej 9 Glostrup, Copenhagen 2600; P. Christiansen, 011-45-52-848-504

Thor Minirace Odense, Sohusvej 255, Alleso, Odense, Behind Alesso Hallen (Sport Centre), Odense, Denmark; Ulrich Rasmussen, 011-45-65-303-707

FRANCE

Auto Electron, 35, rue B. de Ventadour, Limoges, France 87000; M. Boudoul, 55 062763

F.A.B., rue Jean Baptiste Lebas, 62400 Bethune France; Lericque Gerard, 27-57-48-70

GERMANY

MC Koln, Bottgerstr., Worringen, Germany 50769; Ralf Habel, 02733-477493

Mini Car Club Dortmund, Kortschstr. 4, 4600 Dortmund 13, Germany; Roland Schwan, 0231/213609

Oberhausen-Altstaden, Am Fserderturm., Oberhausen, Germany 46099; Josef Holl, 0208-403676

Stoppelhopser Oberhausen, Niebuhrstr., Oberhausen, Germany 46049; Matthias Reckward, 02801-1545

HONDURAS

Autodromo Accion, Quinta Santa Maria, San Pedro Sula, Honduras, Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-2061

HONG KONG

H.K.R.C. Model Car Racing Club, Lot 2130-2137, Ko Po Tsuen, Sha Tau Kok Rd., N.T., Hong Kong; Alex Chan, (852) 659-2822

Kingsville Buggy Arena, Wong Chuk Yeung Village, Shatin, N.T.; Pak Yeung, (852) 607-0828

INDONESIA

Beverly's Racing, Palm St., 188, Surabayua, Jatim, Indonesia; Jhon Mudik, 011-62-31-595-888

ISRAEL

Nahshoneat, Abba Nilel Silver Str. 64, Haifa, Israel 32809; Golan Levy, (972) 039386444 or (972) 04231252

ITALY

Associazione Modellisti Cossato, via P. Maffei, Cossato 13014, Biella, Italy; Zanellato Romildo, 015-405881, fax 015-922709

JAPAN

Courtney Off-Road, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 011-81-61173-53674

Foster R/C Raceway, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; Camp Foster Arts & Crafts, 011-81-61173-53674

Hansen Off-Road, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 011-81-61173-53674

Iwakuni R/C Track, PSC 561, Box 978, FPO AP 96310-0978; David T. Eck, 011-81-6117-53-3662

Misawa R/C Raceway, 13th Fighter Squadron, PSC 76, Box 2585, APO AP 96139-2585; 011-81-176-53-5181, ext. 226-6506

Yokata R/C Racers, Yokata Air Base, Tokyo Fussa-Shi, Japan 96326, June Uchiyama, 0425-54-6942

Zama Off-Road Raceway, 17th ASGCM Unit 45013, Box 3232, APO AP 96338 Japan; SFC Ken Campbell, 011-81-3117-63-8478

MEXICO

Alces Off Road, Lopez Mateos y Rayod S/N, Ensenada, Baja California, BC 22830; Jorge Bustamante, (667) 6-1476, 61477, 86729

Baja Jr., H. Valdez 151 Pte. Y Gmo. Prieto, Los Mochis Sinaloa 81200; Memo Asencio, Gaby Macias, 681-20276; fax, 681-26430

Hobby Centro, 12 De Diciembre No. 3070-A, Guadalajara, JAL 45550; Alejandro Ortiz Del Toro, (36) 21-46-28

Hobby's Formula, Au observatorio 457 DF 01120; (905) 502-3620

Hobby Model's Raceway, Blvd. Garcia de leon, 1555, Morelid, Michoacan 58260; (431) 5-01-22

Jaguar R/C Club, Calz. Zavaleta 116, Puebla 72150; Chema, Denise or Chiro, (22) 31-00-91, (22) 33-00-94

La Hielera, Prol Corregidora Nte 350, Queretaro, QRO C.P 76160; Jorge Morelos Rabell, (42) 12-15-25

Pista Casino, Hotel Casino de la Selva, Cuernavaca, Morelos 16507; Luis Duhart, (73) 19-12-38

R/C Racing Club, Obsidiana #2900, Zapopan, Jalisco 44560; Fernando Hernandez, (3) 616-73-47

Tony's Track, Obregon 364 Sur, Culicán Sinaloa; Guillermo Prieto, (67) 165708-168141

THE NETHERLANDS

H.F.C.C. Hollandia, De Werf 60, The Hague,The Netherlands; G. de Jong, 031-070-3679820

NEW ZEALAND

Counties R/C Raceway, Pukekohe Showgrounds, Station Rd., Pukekohe, New Zealand; R. Northcott, 09 23 86904

Papakura Indoor R/C Car Club, 25 Tainere Cres., Papakura, Auckland; Colin Perry, (09) 298-4711

NORWAY

Dalen Raceway, P.B. 728, 6401 Molde, Norway; Johnny Reitan, 94 64 52 95

PHILIPPINES

Boyel R/C Hobby Shop, Unit No. 10 Lucas Commercial Center, Marcos Hiway, Mayamot, Antipolo, Rizal; Jose "Boy" Chua, 721-2555

Philippine R/C Association, B.F. Homes Paranaque,Metro Manila 1700; Ronald/Manny Villaflor, 23-30-08

SOUTH AFRICA

Gordons Bay R/C Club (GBRC), Andrew Norman Sports Centre, Gordons Bay, Cape Province; Andre Hollander, 024-512865

SPAIN

Motoclub Castellon R.C., Rafalafena, S/N, 12004 Castellon, Spain; Octavio Traver, (34) 64 229705, (34) 64 237411

Outlaw-Ultima II, Puerto Rico 27, Madrid, Spain 28016; Juan Vacas, (34) 915197298

ROARCR, Naval Station, Rota, Spain (P.O. Box 53, FPO NY, NY 09540-0013); PO Kelly Sexton, 011-34-56-822652

CRAEM, La Elipa, Madrid, Spain; Pablo Llorente, 91-3865952

SWITZERLAND

E.M.B.C.M. Raceway, Main Street,opposite police station, 8854 Siebnen, Switzerland;Markus Schmid, 01-9233621

JMRCV-Terraindu Levant, Chemin ou Levant, 1290 Versoix, Geneva, Switzerland; fax, 19 41 22 7790805

VENEZUELA

Las Fuentes R/C Club, 2da Calle las Fuentes El Paraiso, Caracas, DF 1020; Franco Agrusa, (02) 461-72 55

R/C Mariche, KM4 Zona Industrial, Del Este Via Mariche, Caracas, DF 1070-A; Bruno Morganti, 58-02-241-3969 or 241-4993

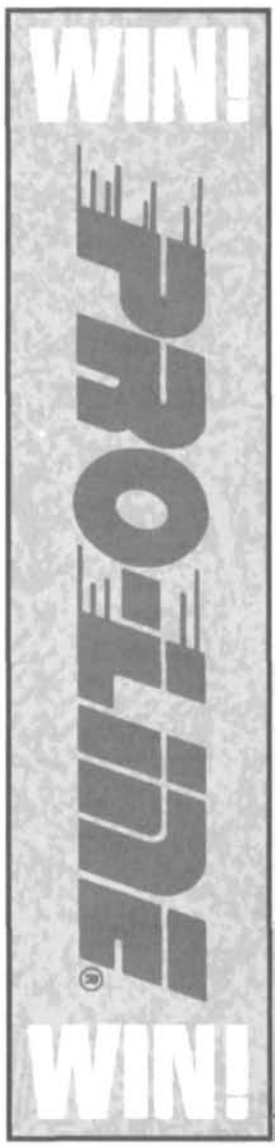
Robin R/C Racing Club, Avenida Bolivar CC Luz #1, Valendia, Edo., Carabobo; Fernando León, (041) 223997 or 222386

WEST INDIES

Island Raceway, 8 Mile Post Jacks Hill, St. Andrew, Jamaica, West Indies; Rodney Littau, (809) 926-7034 or 927-1198

ZIMBABWE

Mosi-Oa-Tunya, H9619 Highland Harare, Harare Country, Masloraland, Zimbabwe; 46237



NEW PRODUCT WATCH

Gentlemen, Start Your Engines!



The basic EG starter unit consists of a starter motor and gear assembly, a wiring harness and the hand-held power unit. Notice that the harness is also hooked to the glow plug.

The gear/motor unit is attached to your engine in place of the pull-start mechanism. The motor spins the crankshaft, and the gear-reduction set provides the motor with increased torque.

KO PROPO EG Starter System

by John Howell

TO GET ELECTRIC cars and trucks running, all you have to do is flip a switch on your ESC, and you're ready to go! Now what if someone made it almost as easy to start your gas engine? Well, KO Propo* has—with their EG starter system.

KO Propo's EG starter system replaces bulky starter boxes and glow igniters. A small gear-reduction unit with its own electric motor takes the place of the engine's pull-starter assembly. The gear unit is hooked to the crankshaft in much the same way as a pull-starter would be. When power is applied to the electric motor, the engine is "cranked over."

That's convenient, but a built-in glow-plug igniter makes things even better. The starter and the glow igniter can be activated in one of two ways. The basic system has a hand-held power unit that contains a common, 6-cell stick pack. A small, electrical connector is attached to the starter motor and to the glow igniter. To fire the engine, just plug the hand-held unit into the connector and press the unit's switch.

Add the optional EG starter remote-control kit to the basic system, and you can start the engine by simply activating the third channel on your transmitter (if so equipped, obviously).

PROPER PROPO PARTS

Initially, I checked out the basic system with the hand-held starter unit. My engine of choice for this test session was Tamiya's* new FS-15 glow engine. This system (no. KOPG1000) works on the O.S. CZ-R, most pull-start .12s *and* the Tamiya .15 engine. Another system fits the O.S. FP-B .10 (no. KOPG1010).

As mentioned, the EG replaces the pull-start mechanism, but it can also be used on non-pull-start engines. You'll need to purchase a pull-start crankshaft (O.S. no. 21202000 or another suitable part).

Space and weight are major considerations, but the EG is fairly small in both categories. The gear-reduction/starter unit weighs in at only 88 grams. Subtract the weight of the pull-start mechanism from this (about 22 grams), and only 66 grams are added to your vehicle. The unit can be attached to the engine in one of three positions; this offers increased versatility in cramped quarters.

A wiring harness connects the starter unit and glow igniter to a receptacle. The receptacle is mounted to the car's chassis, and it's where



The hand-held unit uses a common 6-cell pack to provide power to crank the engine and ignite the glow plug. The unit is fuse-protected and features a continuity light.

you'll plug in the hand-held power unit to start the engine. Attaching the harness is simple: plug in the two motor wires, then attach a lead to the glow plug and another to the engine as a ground. A word of caution: make sure that you keep the wires routed away from the engine; they could melt when the engine is running and short-circuit the system.

START ME UP

To operate the hand-held EG unit, you'll need a 6-cell battery pack with a Tamiya-style connector. The hand-held power unit has a trigger button and a continuity light—if the light's on when you connect to the vehicle, you'll know that everything's A-okay!

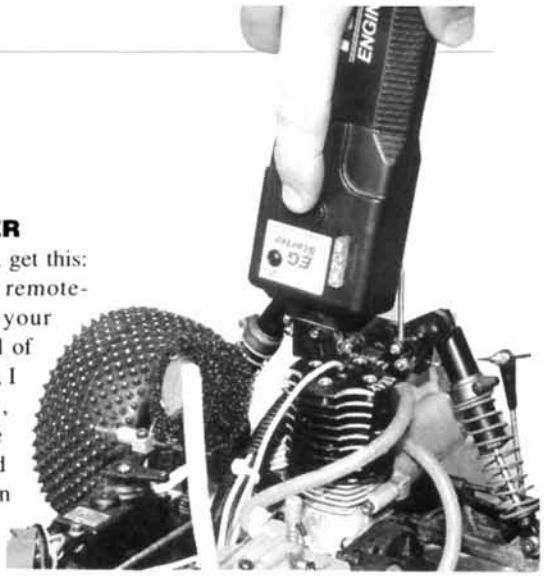
To fire the engine, connect the power unit to the vehicle, observe the continuity light, and press the trigger button. It's as simple as that. Make sure that you don't hold the button down for more than five seconds. If you do, the fuse might blow from the engine load. Besides, if your engine doesn't fire up relatively quickly, you must either replace your glow plug or re-tune your engine.

Oh, one more thing: if your engine doesn't start, and the mechanism stops cranking over, stop pressing the button. Your engine might be experiencing "hydraulic lock." That happens when too much raw fuel is forced into the engine. The engine can no longer compress any unburned fuel entering, so it locks up. To remedy this situation, undo the glow plug, turn it upside-down, pinch the fuel line, and try to crank it over again. If you don't do this and you keep trying to start the engine, you could blow out the gear unit's gears.

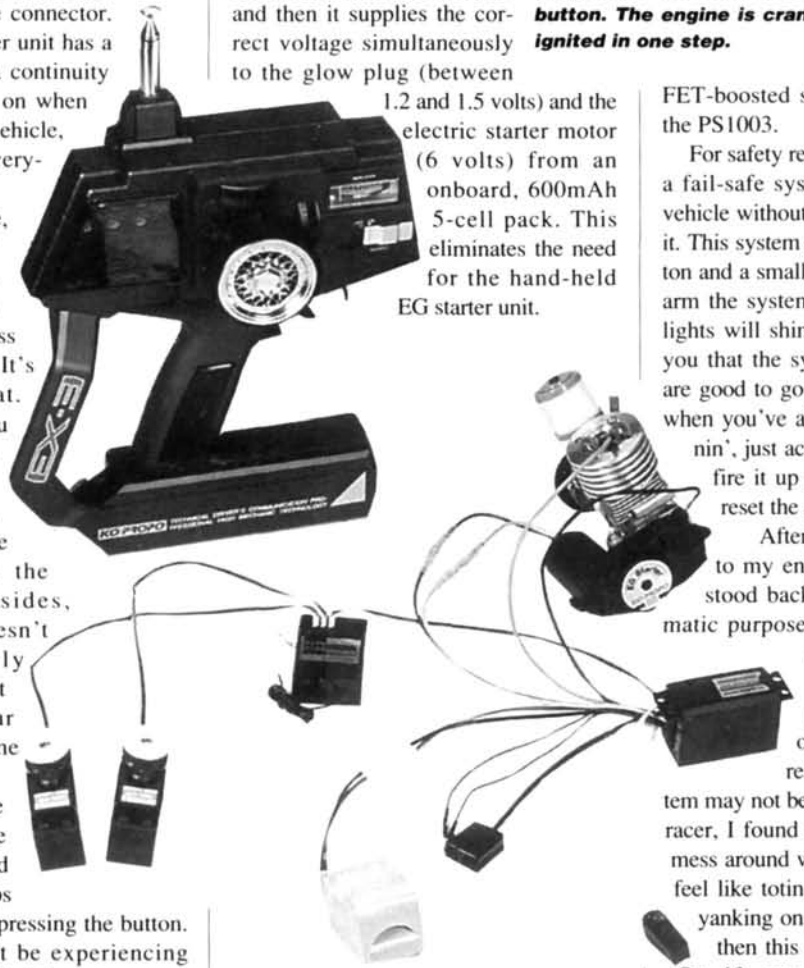
SCI-FI STARTER

If you have a 3-channel radio, get this: by adding the optional EG remote-control unit, you can start your engine using the third channel of your radio. To test this system, I used KO Propo's all-new, 3-channel radio system—the EX-3. You can access its third channel by pushing a button beneath the steering wheel.

The remote starter module receives a signal from the third-channel command, and then it supplies the correct voltage simultaneously to the glow plug (between 1.2 and 1.5 volts) and the electric starter motor (6 volts) from an onboard, 600mAh 5-cell pack. This eliminates the need for the hand-held EG starter unit.



To start the engine, plug the power unit into the wiring harness' connector, then press the trigger button. The engine is cranked and the glow plug is ignited in one step.



An optional, remote-control starting unit is available. This allows the engine to be started by using the third channel on a properly equipped transmitter; this eliminates the hand-held power unit.

For added versatility, the KO Propo remote starter module also has two external receptacle leads that are designed to work with KO Propo's FET-boosted servos—the PS1001 and the PS1003.

For safety reasons, the remote unit has a fail-safe system; you can't start the vehicle without first arming or activating it. This system comprises an arming button and a small LED. Press the button to arm the system, and the green and red lights will shine simultaneously, telling you that the system and the glow plug are good to go. If the engine flames out when you've already got it off and runnin', just activate the third channel to fire it up again; you don't have to reset the system.

After I had hooked up the unit to my engine and radio system, I stood back about 20 feet (for dramatic purposes only) and pressed the third-channel button on the radio. Surprise, surprise: the engine cranked over! Although, for weight reasons, the EG starter system may not be practical for the hardcore racer, I found that it was really cool to mess around with. Besides, if you don't feel like toting around a starter box or yanking on a pull-starter all the time, then this system might be for you. Or if you like tinkering with high-tech R/C gadgetry (as most of us do), check it out. You won't be disappointed.

**Here are the addresses of the companies mentioned in this article:*
KO Propo, *25-10 Sendagi, 3-Chome, Bunkyo-ku, Tokyo, Japan.*
Tamiya America Inc., *2 Orion, Aliso Viejo, CA 92656; (714) 362-2240.* ■

SCOPING OUT

SCI RED BARON

by JOHN RIST

SOMETIMES, HAVING to meet the *R/C Car Action* deadline takes the fun out of writing this column. But when I saw the electronic speed controller (ESC) I had to review this month, I knew it would put the fun back into my life.



Most entry-level R/C vehicles come with a pesky mechanical speed controller. They're often hard to set up and apt to burn out. If you seriously campaign for more speed—adding hotter motors, faster gears and more cells—the stock mechanical controller is on the road to dying young. So I'm always looking for a suitable trick replacement for the stock controller. I was sure I had found one when I looked at the SCI* Red Baron—a moderately priced, sport-style, reversing speed controller. It's easy to adjust and comes with a complete set of factory connectors—two features that make this a controller a natural replacement for a burnt-out mechanical one.

To look inside, you have to break the factory seal to separate the case halves (this probably voids the warranty, so curb your curiosity). Inside, I found surface-mounted components (they save space) and parts that have leads going through the board (they handle power). The solder joints were shiny, and the Red Baron looked as if it could battle with the best of 'em.

BARON BASHING

Never mind its looks; the lab results are what counts! If resistance is low, the ESC is transferring maximum power to the motor, and the controller stays cool (cool is good).

• **Test 1.** With 12 amps of current flowing, I measure the voltage drop across the ESC and then calculate its "on" resistance by dividing the measured voltage drop by 12. I measure resistance twice—along the full length of the motor wires and battery wires (including connectors) and 2 inches along them. The first reading helps me to determine an ESC's "on" resistance as it comes from the factory, and the second gives a standard reading with which I compare ESCs.

—*End-to-end voltage drop:* 0.44 volt—a resistance of 0.037 ohm. This is higher than the resistance of a racing ESC would be, but the Red Baron should do well in a sport vehicle. (A reversing ESC's "on" resistance tends to be twice that of a forward-only racing ESC.)

—*Voltage drop 2 inches along the wires:* 0.33 volt—a resistance of 0.027 ohm (not bad for a sport ESC with reverse).

• **Test 2.** I "cook" every controller I test by adjusting my resistor bank to pass 20 amps of current, jamming the throttle wide open and running the ESC for 15 minutes while it pumps a hefty 20 amps.

SCI didn't provide any heat sinks, and I don't provide any cooling air

SCI Red Baron

DIMENSIONS	
Height	0.81 in.
Width	1.50 in.
Length	1.66 in.
Weight (with wires)	2.1 oz.
TUNING	
Access to controls	Excellent
Ease of adjustment	Fair
Warranty	180 days
ELECTRICAL (Manufacturer's specs)	
Max. voltage (10 cells)	12 volts
Min. voltage (4 cells)	4 volts
Max. current (fwd./rev.)	360 amps
Cont. current (fwd./rev.)	90 amps
Resistance	unlisted
TEST PARAMETERS	
Voltage	6 volts
Current	12 amps
—along full length of wires	0.44 volt
—2 in. along wires (fwd./rev.)	0.33 volt
CALCULATED RESISTANCE	
—along full length of wires	0.037 ohm
—2 in. along wires	0.027 ohm
BEC voltage, 6-cell pack	6.01 volts

Resistance = voltage drop/current

COMMENTS: it has reverse, so the Red Baron is better for backyard burning and scale projects than for organized races. It overheated in my brutal test, but it didn't do so when running in a car (plenty of cooling air). Heat sinks would probably be a good investment. I had a little trouble adjusting it to match my transmitter, but having been correctly set, its forward and reverse were equally strong. Reverse is fully controllable and can handle the same power as forward. This feature makes it easy to match the Red Baron to a transmitter that doesn't have a throttle-reversing switch. If you want to have fun and need an ESC with reverse, check out the SCI Red Baron.

(such as a fan). After 5 minutes, the Red Baron was hot—painful to touch), but still operating well. SCI recommends this ESC only for 5-minute motors (they recommend the Dominator for hotter winds). With air cooling and a 5- to 7-minute run time, the Red Baron should do OK.

• **Test 3.** In my dead-short test, I check to see whether the ESC could survive the heavy current it would have to withstand if a gear jammed or a motor fried. I short the motor and battery leads together and jam the throttle to the wall. The current jumped to 40 amps (the limit of my bench supply).

About 15 seconds into the test, I pulled the plug because things were fast coming unglued. The case had started to melt around four of the FETs. I let the Red Baron cool and then found that, despite the minor case damage, it was still working.

THE RED BARON RIDES

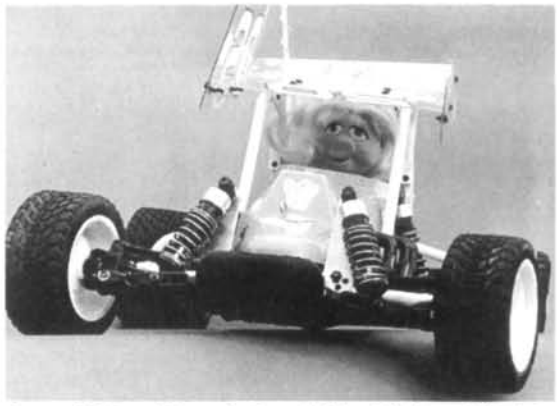
With a full set of factory connectors, installing this ESC in my Kyosho Sideways was easy. A little double-sided tape stuck the controller to the top deck. Don't forget to install the three supplied motor capacitors (instructions are included with the capacitors).

Unique to SCI controllers is the one-pot (neutral) adjustment. By fiddling with my transmitter and the neutral setting on the Red Baron, I found a combination that gave a strong forward and reverse and a solid neutral. The trigger on my Futaba Magnum AM radio can be adjusted to 50 percent/50 percent or 66 percent/33 percent. I can therefore set neutral at the middle or at a third (giving more forward than reverse). To ensure a strong reverse, I chose the 50/50 setting. This is how all stick radios are set up, so the Red Baron should work well with any of them.

If you have a trigger radio that has an off-center neutral that can't be changed, you might have to settle for less than a full-bore reverse; but reverse will still be strong enough to get your car out from under a parked car or away from a curb.

The instruction sheet doesn't give a detailed explanation of how to attach a receiver connector block to the end of the receiver wire. A separate sheet explains (in detail) this function. If you have a problem with this step, or if you have any other problem, there's a toll-free number to reach an SCI troubleshooter.

To complete the installation, I plugged in the various motor and battery leads. Make sure that red is battery + and black is battery -; the blue and white wires go to the motor. If you hook the white wire to the positive brush hood of your motor and the blue wire to the negative brush hood and your car runs backwards, flip the reversing switch on your transmitter's throttle channel. But if your transmitter doesn't have a reversing switch, you can swap the white and blue motor wires. The Red Baron has as much punch in reverse as in forward, so the two are interchangeable.



A special treat! Spy photos of John Rist's mobile lab. Scoping Out hits the road!

RED BARON'S FEATURES

- Full forward and reverse.
- 12 FETs (six for forward, six for reverse—enough to prevent burnout).
- Installed Tamiya-style battery connectors and bullet-style motor connectors.
- Full set of receiver connectors (so it can be used with most popular radios).
- Single-pot adjustment (neutral only, no full speed necessary).
- Two-color, pulse-checking LED (green forward/red reverse).
- Motor capacitors.

Of course, the Red Baron also arrives with an instruction sheet and hot SCI decals.

With the car all set up, I headed out for a test run. Throttle response was smooth; forward and reverse were quite strong. Even though it *is* rough on the gear train, the Red Baron can slam between forward and reverse—a lot of 180-degree, sliding turns!

The car ran for about 6 minutes on a 1400mAh, 6-cell, SCR Sanyo pack. After that, the FETs were quite warm, but not blistering hot as they had been in my lab test. It was a cool day (40 degrees Fahrenheit), and the air flowing over the FETs was obviously doing a good cooling job.

RED BARON REVIEW

The SCI Red Baron should do quite well as a replacement for the pesky mechanical speed controller that comes in entry-level R/C vehicles. I ran into a little overheating during my third test, and this can be accounted for by the Baron's moderately high resistance. SCI's sales literature and the instruction sheet say that this ESC is intended for motors with a 5-minute run time.

SCI also advises that, during the initial runs, you should check the controller for overheating. Heat sinks would be a good investment. You'll need four—one for each group of three FETs. You can use four brake-style heat sinks (short ones), or you can cut two long ones in half to make four small ones. Whatever you do, don't short the four sets of FETs. SCI has placed a plastic rib between the groups, so it's easy to tell them apart.

If you want to replace that burnt-out mechanical speed controller, but you don't want to give up reverse, give the SCI Red Baron a ride. You'll find the fun that R/C can provide.

**Here's the address of the company featured in this article:*
SCI Corp. of America, *P.O. Box 13099, Sarasota, FL 34278.* ■

PROJECT TEAM CAR

(Continued from page 101)

it make a big difference on the track?

I took the car to our local test track, peak-charged my Reedy pack at 4.5 amps with Tekin's new BC48 microprocessor-controlled charger, flipped the switch on my 411G and was off and running. I took the car for a couple of laps, and it felt a little bouncy in the rear, so I switched to lighter springs in the back and tried again. The car felt very planted and nimble over jumps, and after harsh landings from big jumps, the car didn't scrub off too much speed. I chalked this up to the chassis' smooth plastic and narrow design. That's one of its best features—its narrowness. Overall, the car handles very well, thanks, no doubt, to the MIP CVDs and the Stealth tranny's superb performance. After hitting the boards a few times—all right, so I'm not the best driver—I looked over the car very carefully, and it had suffered no damage.

If you're in the market for something new and you like the idea of having a molded-plastic chassis, then check out the RPM Ultra Molded Chassis. And if you're running a Team Car and looking for an inexpensive hop-up, check out the MIP CVDs. They're hitting the hobby shops at 20 to 25 bucks, and I consider that a bargain.

**Here are the addresses of the companies mentioned in this article:*

Associated Electrics Inc., *3585 Cadillac Ave., Costa Mesa, CA 92626; (714) 850-9342.*

RPM, *14978 Sierra Bonita Ln., Chino, CA 91710; (714) 393-0366.*

MIP, *746 E. Edna Pl., Covina, CA 91723; (818) 339-9007.*

Aero-Car Technology, *P.O. Box 336, Western Springs, IL 60558; (708) 246-9027.*

Team Losi, *13848 Magnolia Ave., Chino, CA 91710; (909) 465-9400.*

ETA Racing, *4930 47th St., Lubbock, TX 79414.*

RCPS (R/C Performance Specialties), *18312 Gifford St., Fountain Valley, CA 92708; (714) 962-6928.*

Tekin Electronics, *940 Calle Negocio, #140, San Clemente, CA 92673; (714) 366-9016.*

KO Propo, *25-10 Sendagi, 3-Chome, Bunkyo-Ku, Tokyo, Japan.*

Futaba Corp. of America, *4 Studebaker, Irvine, CA 92718; (714) 455-9888.*

Reedy Co.; *distributed by Associated Electrics Inc. (address above).*

Pro-Line USA, *P.O. Box 456, Beaumont, CA 92223; (714) 849-9781.*

Bich'n Bodies, *4903 Cloverfield Rd., Pearland, TX 77584; (713) 485-0413.* ■

LETTERS

(Continued from page 9)

in the area. Put your phone number on it, and you're all set!

Tamiya, Kyosho and Yokomo make awesome F1 and Sedan parking lot racing-type cars. They're all high-quality kits, so it really depends on what interests you most.

When it comes to drag racing, the only companies that I'm familiar with are Fine Design, 2 North St., Middletown, NY

(Continued on page 176)

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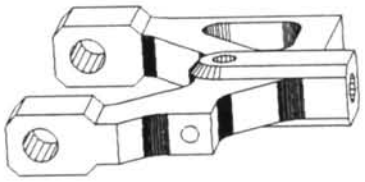
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LETTERS

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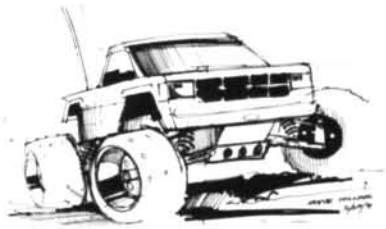
10940, (914) 342-5102; Lockman Precision (ask for Larry or Mike Lockman), 17344 Eucalyptus Unit 1B, Hesperia, CA 92345, (619) 947-3684; Dragwerx (ask for Tom Vasey)—(201) 891-6772; and Lightz Products (ask for Pat McDonald)—(602) 894-6908. John Evans of E&S Racing—(301) 856-8326—should be producing his own funny car shortly. This might interest you, too. According to a few rumors we've heard, Trinity Products will shortly be producing its very own top-fuel and funny-car kits. Stay tuned for more info! JH

FOREIGN FUEL BURNER

I love your mag! In your February '94 mag, you had "New for '94." I read a section on the new Yokomo engines. I tried to contact many R/C stores, but they didn't carry them. Please give me some information on this product. Thanks.

FRED ABRAMOWSKI
Bath, NY

Yeah, Fred, the new Yokomo engines are really nice! Check with Ultimate Hobbies in Orange, CA, at (714) 921-0424. They distribute Yokomo products, and they might have the new .12 and .15 Yokomo engines. If they can't help you, you might want to try to contact Yokomo Ltd. directly at 25-2 Senju Motomachi Adachi-Ku Tokyo 120, Japan; fax 011-81-3-3882-8872. Good luck! JH



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LIGHTEN YOUR TRUCK

(Continued from page 37)

Definitely avoid lightening chassis braces or pieces that tie parts of the chassis together. These pieces are subjected to considerable load and must be strong. (Besides, they're usually small and fairly light to begin with.)

When you've lightened all the large pieces on your truck, you should notice a substantial reduction in weight.

If you really want to get serious, you can lighten the smaller pieces as well; it will all add up and save weight. I know racers who weigh each part before and after lightening it. I don't really think it's necessary to go all out like this. On the track, I don't think you'll notice the effects of lightening small pieces; it makes such a small difference.

I advise you to lighten large pieces and use lightweight after-market parts and hardware. The only advantage to spending a month lightening every little piece on your truck is to psych out the competition. The time would be better spent *practicing!* ■

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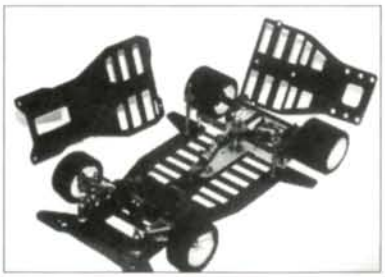
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